



Food and Agriculture
Organization of the
United Nations

LOCAL GOVERNMENT PLANNING FOR COMMUNITY FOOD SYSTEMS

Opportunity, innovation and equity
in low- and middle-income countries

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FOR COMMUNITY
FOOD SYSTEMS**

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Foreword

Over the last couple of decades, local governments have started taking action to address food system challenges. Many innovative food policies have taken place in cities in particular. However, despite major developments spearheaded by visionary local leaders and communities in recent years, local governments in low- and middle-income countries (LMICs) continue to face major challenges in integrating food security, nutrition and sustainable food systems in their agenda.

Radical transformation of today's food systems is required to address urgent challenges of food security and nutrition. With nearly 690 million people suffering from hunger, 144 million children stunted and 2 billion people not having regular access to sufficient safe and nutritious food worldwide, the number of people affected by hunger has been slowly rising since 2014, after a decade of steady decline. The nutritional status of the most vulnerable population groups is likely to deteriorate further due to the health and socio-economic impacts of COVID-19 (SOFI, 2020). The 2030 Agenda and its Sustainable Development Goals and the United Nations Decade of Action on Nutrition (2016-2025) provide the opportunity for joint action towards coherent policies and programs to achieve internationally agreed goals and to implement coherent policies to address malnutrition in all its forms.

In order to achieve this goal, the new Urban Food Agenda of the Food and Agriculture Organization of the United Nations will have to involve the local governments of small but rapidly growing cities and towns in LMICs. Several major trends illustrate why this will be important.

According to the United Nations, 68% of the world's population will live in urban areas by 2050, and around 90% of this increase will occur in small cities in towns of Africa and Asia with between 300 thousand and 500 thousand people. The majority of that rural minority will live very close to an urban center. Nearly 85% of the world's population already lives in or within 3 hours of a town with more than 20,000 people (SOFA, 2017). Furthermore, the World Bank reports that small cities and towns are also the areas where the majority of the world's poor live today.

From a food systems perspective, this growing rural-urban interface is the place where the majority of consumers and producers will be residing. Of the 55% rise in global obesity between 1985 and 2017, the rural share is larger than the urban one. In fact, in LMICs, this trend is increasing at the same rate — and in some countries faster — in rural areas and in urban areas. This puts under scrutiny the widely-held assumption that urbanization is one of the most important drivers in obesity. Lastly, on the hinges of rural and urban extremities is where most of the world's food is grown, where the sprawl is driving farming land conversion, and where key institutions and services for inputs, production, processing and trade are housed.

These dynamics illustrate that the scale of reference for where food system hotspots are is changing. The local level shows the greatest potential for food system transformation. The a-spatial, globally oriented and macro-economic strategies are being replaced by the locally- and spatially-embedded approaches, in which new horizontal and vertical linkages are being articulated between different territorial scales and their governing structures.

The publication Local government planning for community food systems is representative of this new effort to define how exactly subnational governments can engage in good food system planning through community-driven processes, and how these can leverage the local food system for the broader well-being. It introduces a new knowledge base for understanding food planning and governance processes and models in local governments of low- and middle-income countries, a valuable counterbalance to the prevailing literature and experience from high-income countries. It provides practical insights on the needs, challenges and opportunities in local food planning practice in three countries in Asia, Africa and Latin America and the Caribbean. Based on reported cases, this publication offers a broad guiding framework and a methodology for subnational government bodies - including city, metropolitan, regional, distinct and parish governments - that takes into consideration the uniqueness of each local context.

Urban and local planning and policies should aim at building sustainable food systems that can meet an increasing consumers' demand while and provide healthy diets for all, by addressing underlying drivers through innovative technical, institutional and social solutions.

This publication invites us to rethink food systems and supply chains through the lens of a “community”, as a reminder that people and their everyday practices and relationships with food are central to the design of these processes.



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EXECUTIVE SUMMARY

What makes places habitable for people? The profession of planningⁱ has long wrestled with this seemingly simple question. In its grandest definition, planning is about creating the conditions in communities such that people can lead full, healthy, and meaningful lives. An essential element of what makes places work is, of course, food. Food is essential for sustenance and health, a marker of people's identities, and, simply, a source of joy.

Food comes to people via a complex and rich web: a community's food system. A community's food system (CFS) is the place-based infrastructure that enables food to travel from source to plate and beyond. Communities' food systems encompass a complex set of interlinked activities that enable the production, aggregation, processing, wholesale, and retail of food, in addition to the acquisition, preparation and consumption of food by people. Community food systems are also responsible for important community outcomes, including nutrition, jobs, public health, environmental health, etc. A well-functioning community food system relies on a variety of factors, including the availability of natural, financial, and material resources; access to information and technology; enabling policy landscapes; and fair and just governance arrangements for all actors within a food system.

Planners play a key role in a community's food system through their explicit and implicit actions.

Planning is often, but not always, carried out by government entities at varied levels of government, including national, state, and local levels. This report focuses on planning activities facilitated by local governments. The structure of substate governments varies from country to country. We use the term "local government" to refer to the smaller (not smallest) units of national governments, including city government, metropolitan or regional governments, town government, parish government, or other substate levels of government.

Local governments around the world are beginning to plan for, strengthen, and leverage their communities' food systems for the health and well-being of their communities. Yet, there remains a dearth of guidance on how local governments and planners can step into the emerging area of food systems planning. The report describes the many pathways by which planning intersects with communities' food systems, especially as practiced under the umbrella of or in partnership with local, regional, or other substate governments. The framework in this report focuses on the local, regional, or other substate scales not because this is the preferred scale of action. Indeed, it is not. Instead, the substate space is the scale at which

people most intimately experience places as well as feel the impact of planning decisions. Moreover, the local and regional scales of cities, city-regions, metropolitan areas, and similar conurbations provide an important yet routinely overlooked opportunity for action. Of course, planning and implementation at the city, local, or city-region scales must be complemented by efforts at the national and international scales.

The report is specifically designed for substate-level government bodies, including city, metropolitan, regional, district, and parish governments. It is not prescriptive; instead, it highlights questions that communities can ask when planning their food systems. The communities themselves are best suited to answer these questions, to reveal context-sensitive ways to strengthen and leverage their food systems for broader well-being. In essence, the report outlines in broad contours a framework and methodology for planning community food systems based on experiences of Low- and Middle-Income Countries (LMICs). Our focus on LMICs is intentional. Much literature on food systems planning already centers on the experiences of High-Income Countries (HICs)—indeed, a great deal has been written about initiatives in HICs. With this report, we hope to present a framework based on the aspirations, successes, and challenges of communities in LMICs.

ⁱ The profession of planning varies considerably across the globe, and includes spatial planning, town planning, urban and regional planning, city planning, and/or rural planning.

The report includes six sections.

The introductory section describes the many ways in which local government action influences a community's food system, through direct and indirect pathways.

Land use planning decisions, for example, directly influence where agriculture may or may not occur within the boundaries of a local government jurisdiction. On the other hand, actions related to housing, though ostensibly unrelated to the food system, have an indirect influence on people's experience within the food system. For example, in a jurisdiction where housing supply is limited or unaffordable, residents will make difficult tradeoffs; people are likely to skimp on meals or make do in order to meet housing costs, which are inelastic. Planning decisions to invest in affordable housing in such communities, therefore, will indirectly increase residents' ability to acquire, prepare, and eat food.

Section 2 provides a brief review of the literature on the emerging field of food systems planning.

The chapter describes the benefits of food systems to communities, including improved nutrition, ecological health, economic returns, and stronger social ties. Recognizing these benefits, community and civic organizations across the world have led the charge for transforming and/or leveraging food systems for greater community benefits. The section concludes with a number of gaps and cautionary notes emerging from the literature. These include the following: excessive formalization of food systems planning may lead to exclusion or marginalization of

informal food systems actors; local government action to strengthen food systems remains under-evaluated and unmonitored; and limited guidance and support from higher levels of government may limit or counteract local governments' efforts to strengthen food systems.

Given that local government representatives may find it helpful to see precedents set by other local governments from across the globe, section 3 provides multiple examples of plans and policies adopted and implemented by local governments to strengthen and leverage food systems for broader community well-being.

The examples include formal plans, financial incentives, regulatory mechanisms (zoning bylaws and ordinances), and public programs that strengthen city and regional food systems. Plans and policies come from a range of geographies, including from Bulawayo, Zimbabwe; Camilo, Argentina; Capetown, Ecuador; Cayagan de Oro, Philippines; Clarendon, Jamaica; La Paz, Bolivia; Lima, Peru; Mexico City, Mexico; Nairobi, Kenya; and Quito, Ecuador. The section also provides additional resources, including supplementary on-line databases where additional examples are available for local governments.

Planning for food systems depends very much on the context of a city or a region. To that end, section 4 provides in-depth case examples to detail the experience from four places in three countries; Ghana, Jamaica, and India. The cases include the district of Thiruvananthapuram in

Kerala (India), the Khordha district in Odisha (India), Accra Metropolitan Area (Ghana), and Clarendon parish (Jamaica).

The cases vary in population size, from more than 3 million to under 250 000, and exhibit varying degrees of urbanization pressures. Each case study details the complexity of the community's food system; describes the planning and policy landscape within which the food system functions; illustrates the opportunities afforded by the food system within that local jurisdiction; and concludes with ideas for how to strengthen the food system. The cases place the experience of smallholder farmers as central to a community's food system. Collectively, the cases are based on approximately 100 open-ended interviews conducted in 2018 with smallholder farmers, food systems stakeholders, and policy stakeholders in communities.

The cases illustrate that urbanization, globalization, and climate change pose challenges for communities' food systems. Yet, multiple food systems stakeholders, especially smallholder farmers, continue to adapt in the face of these challenges. With purposeful support from local government planners and policy leaders, there is an opportunity to create more sustainable, equitable, and innovative community food systems.

The experiences of communities in LMICs suggest the need for context-sensitive, locally-informed planning processes and methodologies. Although a great deal of literature, policy, and planning

precedents are available from across the globe, little fits the contexts, experiences, opportunities, and challenges of communities in LMICs. Moreover, the experiences of local governments are unique, and driven, in many cases, by strong central government regimes. To that end, it is difficult and perhaps foolhardy to propose a prescriptive approach to food systems planning at the local or regional government levels. Instead, we offer a broad framework for planning processes that local and regional governments could adapt for their own communities.

Outlined in section 5 of the report, this broad approach to food systems planning, which we call the Opportunity-Innovation-Equity (OIE) framework, aims to build on existing strengths in a community, propel innovation, and ensure that the well-being of those at the margins of society are protected. At the heart of the OIE framework is a set of principles, or characteristics, as well as a process for engaging in planning rather than a set of prescriptions.

The OIE framework describes 10 characteristics of good food systems planning. Good food systems planning: 1) builds on existing opportunities; 2) ensures inclusion, equity, and justice; 3) is forward looking; 4) amplifies innovation; 5) relies on evidence; 6) recognizes the spatial nature of food systems; 7) uses a systemic approach; 8) protects the public interest; 9) is action driven; and, importantly, 10) emphasizes monitoring and

evaluation. Section 5 also details the process by which a local government and its partners can engage in such good food systems planning.

The planning process for the OIE framework comprises of nine broad steps: 1) building and nurturing partnerships and governance structures; 2) scoping the food systems planning process; 3) setting the table for the food systems planning process; 4) envisioning the future and determining goals and objectives for the community food system; 5) assessing and analyzing baseline conditions in the community food system; 6) identifying opportunities for change; 7) proposing and vetting ideas for the future; 8) implementing the ideas; and 9) monitoring, evaluating, reflecting, and correcting the course of action. Although the nine steps are described in this section in a sequential manner, the process is often messy, complex, circular, and, in equal measure, both art and science. Whose voices are included (or excluded) shape the outcomes of food systems planning processes. Scholars caution that if planners fail to include, they will plan to exclude.

In its conclusion, the report reinforces the critical role of community food systems for broader social transformation in cities and regions. Local governments have the ability, indeed, the responsibility, to collaborate with stakeholders to harness and amplify the opportunities available within their jurisdiction to develop

more innovative and equitable community food systems. There is no one-size-fits-all approach to food systems planning; each community's opportunities and challenges are unique. Building community trust, designing inclusive planning processes, and conducting contextually scoped community food system assessments are key to planning, strengthening, and leveraging food systems for community well-being in LMICs.



©UB Food Lab

Harvest in Thiruvananthapuram



1



INTRODUCTION

INTRODUCTION

What makes places habitable for people? The profession of planning has long wrestled with this seemingly simple question. In its grandest definition, planningⁱⁱ is about creating the conditions in communitiesⁱⁱⁱ so that people can lead full, healthy, and meaningful lives. An essential element of what makes places work is, of course, food. Food is essential for sustenance and health, girds people's celebrations and identities, and, simply, gives us joy.

Food comes to people via a complex and rich web: a community's food system. A community's food system is the place-based infrastructure that enables food to travel from source to plate, and facilitates the management of food-related byproducts.¹ Communities' food systems encompass a complex set of interlinked activities that facilitate the production, aggregation, processing, wholesale, and retail of food, and the acquisition, preparation and consumption of food (Figure 1.1). Community food systems use various inputs (e.g. natural resources such as energy, water, and soil) and are responsible for various community outcomes (e.g. nutrition, jobs, public health, economic health, and environmental health). Food may be lost or wasted throughout the food supply chain, as illustrated by the green backdrop in the figure.

Each sector within the food supply chain encompasses a broad set of activities. Overall, however, *food production* comprises agriculture,

hunting, foraging, fishing, and so forth, to produce food for human consumption. *Aggregation* is the effort to gather food produced by multiple sources, such as farms, for delivery to food processors or other buyers. For example, dairy farmers may sell milk from their herd to a milk aggregation cooperative. *Processing* includes all activities that alter the eating quality or shelf life of food. Although definitions vary from country to country, food processing can refer to one or a combination of a variety of activities, including washing, chopping, pasteurising, freezing, fermenting, and packaging that turn fresh food into food products. Food processing also includes combining ingredients or adding components to food, e.g. adding vitamins and minerals to improve the nutritional quality of food.

Food processing can range from small- to large-scale processing, with varying implications for communities' food systems. Raw, aggregated, and value-added produce ends up with wholesalers, which sell food in bulk quantities to buyers, such as grocery store operators, street vendors, or restaurants; these buyers, in turn, sell to end consumers.

The nature of the supply chain varies widely across the world and, in fact, from city to city. In HICs, vertical consolidation within the supply chain is not uncommon. A single corporation may own a farm, an aggregation unit, a processing unit,

and a retail operation (supermarket) that sells to consumers. On the other hand, in a short supply-chain environment in LMICs, a farmer may directly sell her produce to a consumer.

In the shortest supply chain, some may grow food for their own sustenance.

ⁱⁱ The term "planning" is used differently in different parts of the world. Planning may refer to spatial planning, economic development planning, etc. We refer to planning in its most broad and grand sense. Planning is often, but not always, carried out by government entities at local, state, or higher level of governments. In this report, we are especially focused on the role of subnational governments. The structure of subnational governments varies from country to country. We use the term "local government" to refer to the smaller (not smallest) units of national governments that are predominantly responsible for leading substate planning and development responsibilities in places. Local governments may refer to city government, metropolitan or regional governments, town government, parish government, or other substate levels of government.

ⁱⁱⁱ In this report, we use the word "community" to describe a geographic area that is smaller than a country or a state within a country. We choose this somewhat ambiguous word because of the diverse nature of subnational and substate geographic arrangements across the globe. A city, town, district, village, county, parish, or a neighborhood are all examples of a community. A city-region, too, can be a community.



Figure 1.1
A simplified food system

Supply chains also vary considerably for different types of foods.

The supply chain for fruits and vegetables, for example, looks quite different from the supply chain for items that provide animal protein (e.g. beef, dairy, pork, eggs and poultry). Not surprisingly, the opportunities and challenges for each type of food within a food system vary widely, too. Currently, the supply chain for nutrient-rich foods is experiencing more difficulties, compared to the supply chain for less nutritious foods. The State of Food Security and Nutrition in the World 2018 report points to the ways in which current market-based systems incentivize supply chains that advance nutrient-poor, ultra-processed foods, further contributing to food insecurity and malnutrition. Alternatively, markets and corporations can be reoriented toward endorsing food supply chains that add value by promoting the health and well-being of people and the natural systems on which populations depend.²

Unpacking the supply chain of the food system, while important, only tells part of the story of a community's food system. Communities' food systems are social, political, economic, cultural, and ecological systems. Food systems use, generate, and are embedded in material and non-material resources. Food systems, for example, use water and energy and generate organic and non-organic waste. They depend on a wide set of public, private, and civic actors and institutions. These actors and

institutions have varied authorities and power to create, enforce, and subvert relationships and hierarchies within the food system. Last but not least, communities' food systems are embedded in public policy structures that are created and enforced at the global, national, and local scales. Marginalized groups, including smallholder farmers, farmworkers, the poor, women, and indigenous groups, are unfortunately left out of many of the processes controlling policy structures and processes that impact them.

Community food systems have considerable influence on the well-being of people and communities. Most directly, community food systems shape the quantity, type, and quality of food that is grown, processed, distributed, acquired, and eaten in communities. This view represents an important but partial understanding of the value of food systems to communities. In fact, food systems play a key role in other *non-food* spheres that make life better (or worse) in communities. Consider the following: Food systems are economic engines that employ people. Food systems are ecological systems that use and regenerate natural resources. Food systems are social, cultural, and identity spaces within which people derive meaning, build memory, and find purpose. In fact, looking at a place through the lens of a food system helps us see how well the place works for its people.

Local governments^{iv} and planners play a key role in a community's food

system, both through their routine planning tasks, which *indirectly* influence the food system, and by *directly* working to strengthen the food system. Consider, first, the routine tasks performed by local governments and planning departments (or their equivalent). They may develop master plans that set the stage for future development and growth in a community. They may create long-term land use plans that determine how and where land gets used. They may provide housing. They may develop poverty-alleviation and economic empowerment programs. They may monitor compliance with zoning and building bylaws and regulations. They may be responsible for planning a community's transportation infrastructure. In short, planners engage in a wide variety of tasks that affect the daily lives of present and future generations in communities and impact the overall sustainability of food systems. Through these routine planning activities, planners affect food systems, as detailed on the following page.

^{iv} The structure of subnational governments varies among countries. As noted earlier, local government may refer to city government, metropolitan or regional government, town government, parish government, or other substate levels of government.



Food production activities require land with fertile soil (for agriculture), clean water (for fishing), and healthy forests (for hunting and foraging). Routine development or land use planning, for example, determines which lands are designated for development and which are protected. What may appear as a planning or development decision to allow the construction of a house (or not) is, in fact, a decision to allow current and future communities to grow food, hunt, fish, or forage for food (or not).



Food aggregation, which includes the aggregation of food grown, harvested, or raised at multiple sites for storage and distribution to processors or markets, requires infrastructure such as roads, storage, and other facilities. The availability of such infrastructure is determined, in part, by the investment and support of local (and higher levels of) governments. For example, transportation planning determines the quality, efficiency, and level of service of roads and other forms of transit. In LMICs, the limited availability of transportation is often a challenge for smallholder farmers.



Local and regional governments also impact **food processing and manufacturing**. For example, economic development programs and workforce development programs led by, or supported by, local and regional government efforts can shape the quality and readiness of a community's workforce to engage in entrepreneurial activity in the food processing and manufacturing sectors.



A whole range of local government activities support (or thwart) **food wholesale, retail, and food service**, which involves selling raw and value-added food products to intermediate or end customers. For example, municipal land use or zoning laws influence *where* food retail establishments, such as grocery stores, are located in cities and surrounding regions. Bylaws that prohibit street vending in a neighborhood directly impact whether residents in that neighborhood can purchase food in proximity to their homes. In many settings, local governments also oversee the issuing of licenses for food retailers and food service providers, such as restaurants, and oversee food safety in these establishments. Finally, the manner in which a local, regional, or higher level of government invests in public transportation affects how easily, efficiently, and affordably residents can travel to purchase food from retail destinations in distant locations.



Activities that *ensure* that people can **acquire, prepare, and eat** food are also part of routine local government practices (in some parts of the world), especially through social service and public health programs addressing hunger, food safety, and nutrition. Many local governments run meal programs in communities and sometimes in institutional settings, such as public schools and hospitals.



Management of food loss, food waste, and food-related waste is often part of the routine activities of local government agencies that manage the reduction, reuse, and recovery of solid waste in their jurisdictions. The food system generates solid waste at multiple points. Food can exit the supply chain between the farm and the market, resulting in food loss. Food loss may occur at the stage of pre-harvesting, such as through pest infestation, or it can happen post-harvest due to problems in handling, storage, or transportation. Food may also get wasted. Food waste, as distinct from food loss, refers to discarding or under- or poor utilization of food that is otherwise safe and edible for human consumption. Wholesome food discarded from household and restaurant kitchens, for example, contributes to food waste. Overall, the food system not only generates organic solid waste in the form of food lost or food waste, but, increasingly, food and beverage packaging waste in the form of plastics and other non-organic materials. Local governments are often responsible for managing the lost or wasted food, as well as associated food packaging.

The examples mentioned thus far pertain to routine local government actions that *directly* influence each sector of the food system. Local government planning and development decisions also impact food systems through *indirect* pathways. We outline a few examples below.

Housing action by local governments.

A community with a limited supply of housing is likely to see an increase in one or more of the following issues: housing prices, informal housing settlements, and homelessness. In all three scenarios, residents struggling to meet their need for shelter will make difficult trade-offs. Food is one area in which residents will make trade-offs. People are likely to skimp on meals or make do in order to meet housing costs which are inelastic.^{4, 5} Where there is no housing available, for example, among many street dwellers in LMICs, the ability to cook a nourishing meal on a regular basis is constrained. Planning decisions to invest in affordable housing in such communities, therefore, will *indirectly* increase people's ability to acquire and eat food.



Livelihood and income generation initiatives.

Local and regional governments engage in various actions to sustain or enhance the livelihoods of residents in their jurisdictions. Any efforts to support livelihood, including support for generating living wages, are, in fact, default food policies since they allow residents to purchase food. As cities grow and economic opportunities concentrate in urban areas, disinvestment in rural communities might lead to rural-urban population migration. Income-generating programs in rural areas, where most of the world's agricultural production occurs, are food systems planning actions as well.



Procurement decisions by and for local government agencies and institutions.

Local governments often procure food (and other supplies) for their offices, events, and institutions such as hospitals, schools, etc. In the United States, for example, many school district governments, which are a form of local government, procure food for school lunch programs. In other countries as well, local governments engage in purchasing food for meals served at schools. Belo Horizonte, Brazil, for example, has a policy framework in place for procurement of food served through schools. Food procurement by local governments can be used to generate demand for locally produced and processed food.



Transportation initiatives.

Local and regional governments' efforts to strengthen public transportation infrastructure ostensibly aim to enhance people's access to goods and services. In places without affordable and healthy food sources nearby, residents rely on public transportation to reach distant food sources. Additionally, in rural communities, public buses and trains also enable smallholder farmers or small-scale vendors to transport their produce to nearby markets and buyers. Growing transportation costs also increase food prices for customers. For example, in Latin America, between 18 to 32 percent of the final price of food products is attributable to transportation costs.⁶



Land and property tax initiatives.

Local governments routinely oversee land taxation systems by regulating property ownership and levying and collecting land and property taxes. While higher levels of governments mandate the authority to levy and collect taxes, local governments are most acutely aware of and most commonly enforce land taxation systems. Efforts that raise, lower, or exempt tax on agricultural (and other) land in particular locations impact the price of available land as well as the pace and location of land development in communities. The limited availability and high price of land increase the cost of engaging in agricultural business in a community.



Water sanitation and infrastructure.

Local governments manage the availability of clean water for communities to enable a range of household-level activities: daily sanitation, cooking, drinking, and crop or garden irrigation. In addition, governments may sanction the use of waterways for corporate interests, such as natural resource extraction or large-scale floriculture, fisheries, horticulture, forestry, etc. Water infrastructure may not extend to smallholders living in more remote areas. Depending on government priorities and economic activities in a community, household access to clean water may be more or less challenging.



Despite the many ways in which local governments directly and indirectly influence each sector of the food system, many local governments around the world have been largely passive about their role in strengthening their communities' food systems. Fortunately, some local governments are beginning to plan for, strengthen, and leverage food systems for the health and well-being of their communities.

Public health practitioners and scholars also recognize the many interconnected threats to the global food system and opportunities to assure planetary health, social equity, and economic prosperity.² Yet, how the community food system can be rebuilt is not well documented. There remains a dearth of guidance on *how* local governments and planners can engage in food systems. This report aims to fill the gap.

The report describes the many pathways by which planning interfaces with communities' food systems, especially as practiced under the umbrella or in partnership with local, regional, or other subnational governments. The framework in this report focuses on the local, regional, or other subnational scales *not* because this is the preferred scale of action. Indeed, it is not. Instead, the substate space is the scale at which people most intimately experience places as well as the impact of planning decisions. Moreover, the local and regional scales—of cities, city-regions, metropolitan areas, and similar conurbations—provide an important, yet routinely overlooked, opportunity for action. Of course, planning and implementation at the


city, local, or city-region scales must be complemented by efforts at the national and international scales, but that is a matter for another report.

How exactly do planners and substate governments engage in good food systems planning? How do *people* drive the process of planning to transform food systems in their communities? How do communities leverage food systems for broader community well-being? This report attempts to answer these questions. The report is specifically designed for substate-level government bodies, including city, metropolitan, regional, district, and parish governments. It is

not prescriptive. Instead, it highlights questions that communities can ask. The communities themselves are best suited to answer these questions, to reveal context-sensitive ways to strengthen and leverage their food systems for broader well-being. In essence, the report outlines, in broad contours, a framework and methodology for planning community food systems based on experiences of LMICs.

Our focus on LMICs is intentional. Much literature on food systems planning centers on the experiences of HICs—indeed, a great deal has been written about initiatives in





HICs. With this report, we hope to present a framework based on the aspirations, successes, and challenges of communities in LMICs.

The report includes six sections. Following this introduction, section 2 draws on the literature to provide a broad overview of the field of food systems planning. Section 3 provides examples of local government policies from across the globe. Section 4 presents four in-depth case examples from three countries where food systems present an opportunity for equitable innovation. Section 5 offers a framework and methodology for subnational governments aiming to strengthen food systems through planning. Section 6 synthesizes the report and offers cautionary notes.



2



LOCAL GOVERNMENTS AND COMMUNITY FOOD SYSTEMS

LOCAL GOVERNMENTS AND COMMUNITY FOOD SYSTEMS

Food systems planning is a fairly new subfield within the profession of urban and regional planning, or town planning, as it is sometimes called. Until recently, urban and regional planners did not *explicitly* pay attention to food systems. Yet, planners' day-to-day activities, ranging from land use planning to developing transportation corridors, obviously impacted food systems. Fortunately, in the last two decades, a great deal of scholarship about the importance of food systems has emerged, outlining why and how planning should engage food systems.^{1, 7-20} Most recently, for example, FAO and UCL Press co-published a book on integrating food into urban planning.²¹ Additionally, professional planning organizations have offered guidance to practitioners on *how* to engage in the art and craft of food systems planning.^{8, 22} Many local governments have adopted and implemented policies to strengthen and leverage food systems for community well-being across the globe.²³⁻⁴¹ This section of the report maps the literature on such efforts globally, especially in LMICs.

Benefits of food systems to communities

Food and Nutrition

Food, which is the direct output of a

food system, has a direct bearing on people's nutrition and broader well-being. In LMICs, malnutrition in all its forms, including undernutrition, obesity, and other dietary risks, is the leading cause of poor health.² The food system, as noted above, is a soil-to-soil system and thus determines the extent to which a sufficient, nutritious, and affordable supply of food is produced in a community. Food production practices include agriculture, fishing, ranching, hunting, gleanings, and foraging. All of these practices can provide improved nutrition in communities.

In many communities, especially in LMICs, people depend on small-scale producers and family farmers to meet their food and nutritional needs. Estimates suggest that family farms^v occupy approximately 70–80 percent of farmland and produce more than 80 percent of the world's food in value terms.⁴² A 2017 global study of 55 countries (and 154 crops) across the globe suggests that smallholder farmers, farming on less than two hectares (ha) of land (0.2 km²), produce 28–31 percent of total crop production and 30–34 percent of the food supply on 24 percent of the gross agricultural area.⁴³ Of course, regional variations exist in agricultural scale and productivity across the globe. A 2018 study published in *Lancet Health* reports that whereas large farms (greater than 50 ha, or 0.5 km²) dominate production in North America, South America, Australia, and New Zealand, more than 75 percent of food commodities in sub-Saharan Africa, Southeast Asia, and South

Asia come from medium-sized farms (20 to 50 ha, or 0.2–0.5 km²). Most important, the majority of vegetables (and principal micronutrients) are produced in spatially diverse agricultural landscapes where more, rather than fewer, varieties of crops are grown in an area.⁴⁴

Ecological benefits

A community food system both uses and generates ecological resources and services. Multiple sectors of the food system, such as agriculture, processing, wholesale, distribution (transportation), and preparation, depend on sufficient quantities and quality of soil, water, and energy to ensure the food supply.

In an increasingly globalized world, food is often produced in locations quite distant from consumers, with varied ecological implications. Increased distance to transport food may lead to greater consumption of fossil fuels. Some studies (in the US) also indicate that higher production and consumption of meat, rather than vegetables, are associated with higher greenhouse gas emissions.⁴⁵ In addition, greenhouse gas exposure can make food less healthy by reducing levels of important nutrients, such as zinc, iron, calcium,

^v Of the approximately 570 million farms in the world, 90 percent rely primarily on family labor. In other words, 90 percent of farms are family farms. Although it is difficult to clearly define family farms due to variation and lack of systemic, comparable data, family farms may be understood in terms of their type of management or ownership and their labor supply. Family farms range in size and income generation, with many being relatively small-scale. Globally, 475 million farms are small-scale farms (on less than 2 hectares).

and potassium, in some food crops.⁴⁶ Conversely, a food system can contribute to ecological health by closing the loop on waste/loss streams. For example, a community may work to reduce organic waste/loss in all sectors of the food system and return wasted/lost food to the soil, through composting or other organic waste reclamation methods. Communities across the United States have begun to recognize the ecological benefits of community food systems by incorporating food production spaces into existing green infrastructure. In Detroit, for example, the city's green infrastructure plan emphasizes the use of urban agriculture for ecological services such as storm water abatement and resiliency against extreme weather events (e.g. floods).

Economic benefits

The food system is a significant factor in communities' economies. Food systems provide jobs and income by employing people in diverse jobs, from farming to food manufacturing. Food systems also generate revenue for the public sector through taxes paid by food businesses and other ancillary revenue. In 2016, in the Northern Mindanao Region of The Philippines, the agricultural sector alone was responsible for 21.9 percent of the gross regional domestic product (GRDP).⁴⁷ Ancillary industries linked to the agricultural sector likely have an even larger economic impact. In HICs, too, the food system is big business. In the Buffalo-Niagara metropolitan area in the United States, globally known

as the home of Niagara Falls, the food system, across all sectors, is responsible for about 10 percent of the region's gross domestic product (GDP).⁴⁸

Most local governments rarely understand the *holistic* impact of a food system on their jurisdictions' economies. Instead, many local governments focus on the economic impact of *one* sector at a time (e.g. agriculture or food manufacturing).

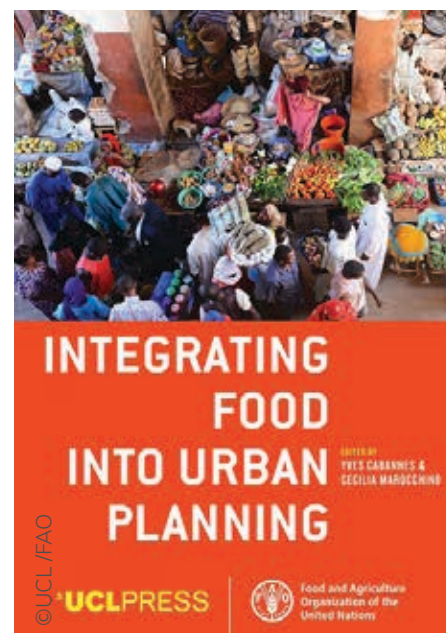
This sectoral view is a missed opportunity, as communities are unable to recapture the greater economic return that can come from well-aligned and tight linkages *within* their own food systems.

Social benefits

The food system has spaces of exchange where people can interact, create memories, express cultural identities, and build social cohesion. A few examples of physical spaces are outdoor markets (e.g., bazaars or souks), streets with vendors, and farmers' markets that draw residents and visitors alike. Of course, the degree to which these spaces are inclusive, affordable, *and* authentic determines the extent to which they work for residents.

Community-led efforts to transform or leverage food systems for community benefits

The work of community organizations and food advocates across the globe to strengthen community food systems has



attracted the attention of local governments. A considerable body of literature documents this effort, especially the efforts of community organizations to engage in and promote urban agriculture in cities and regions. Much of this literature has focused on HICs, although scholars are also writing about this in LMICs.

Civil society-led efforts have reclaimed and transformed food systems. In Buffalo, New York; Detroit, Michigan; and Madison, Wisconsin community advocates have pushed for urban agriculture as a valued land use in cities. In Buffalo, community efforts eventually led to broader change in city-wide municipal land use policy. Notable civil-society efforts to strengthen food systems also exist in LMICs, such as in Bangkok, Thailand,⁴⁹ Lima, Peru,⁵⁰ and Thiruvananthapuram, India, among other places. In Thiruvananthapuram, Kerala, for example, a civil society organization called Thanal, is tightening links across sectors of the food system. Thanal connects local growers with consumers by operating a storefront for organic growers. The organization also works to reduce, recover, and repurpose loss in the food system by advocating for composting among residents. In partnership with the Thiruvananthapuram Municipal Corporation government, Thanal hosts a three-month Green Army fellowship for residents to learn and implement composting and other waste reduction techniques. Section 4

details the challenges and successes in Thiruvananthapuram.

Gaps and cautionary notes

Despite growing interest in strengthening and leveraging food systems through local government action, the literature raises some cautionary notes.

We highlight the following areas that warrant caution about local government engagement:

1. The formalization of food systems planning activities may lead to the social exclusion or marginalization of informal food system actors.⁵¹
2. Local government action frequently does not reflect awareness of pre-existing, civil society-led efforts to strengthen food systems.
3. Local governments tend to regulate rather than invest in food systems; over-regulation can stifle civil society-led and private-sector innovation in the food system.
4. Local government action to strengthen and leverage food systems remains under-evaluated and unmonitored; although numerous metrics have been proposed in recent years, there is limited evaluation to confirm that local government action regarding food systems helps to advance health, economic, and environmental goals.
5. Local governments in LMICs have limited financial and technical



resources. Therefore, taking on one more area of responsibility, such as planning food systems, may be counterproductive to broader well-being (e.g. in regions enduring conflict or war, evacuation planning, not food systems planning, may be more important).

6. Absence or limited guidance from higher levels of government, such as the federal, central, or state levels, may limit (or counteract) local governments' ability to strengthen food systems.

7. Finally, in places where nation-states have little or no legitimacy among residents, food systems planning could be used as an instrument of state control.

Overall, food systems provide a host of public goods, and astute local governments and planners can use their communities' food systems for broader economic, ecological, and social gains. The next section outlines some of the ways in which local and regional governments are doing this globally, especially in LMICs.



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3

A photograph of young green plants growing in a field under a blue sky with light clouds. The plants are in the foreground, and the background is slightly blurred. A teal-colored banner is overlaid on the bottom half of the image, containing white text.

PLANNING AND IMPLEMENTATION TO STRENGTHEN AND LEVERAGE FOOD SYSTEMS

PLANNING AND IMPLEMENTATION TO STRENGTHEN AND LEVERAGE FOOD SYSTEMS

Numerous local and regional governments across the globe are preparing, adopting, and implementing policies to strengthen food systems. Guidance and support for addressing food systems through policy are invoked in the *New Urban Agenda* (NUA), which was adopted at Habitat III, the United Nations Conference on Housing and Sustainable Urban Development, in October 2016 in Quito, Ecuador.⁵² The NUA explicitly calls for engaging in food systems planning, or urban and territorial planning strategies for food systems, an important signal for policymakers globally. The document outlines a “shared vision” in which cities and human settlements are envisaged to provide “equal access for all to public goods and quality services in areas such as food security and nutrition” (p.5, NUA).

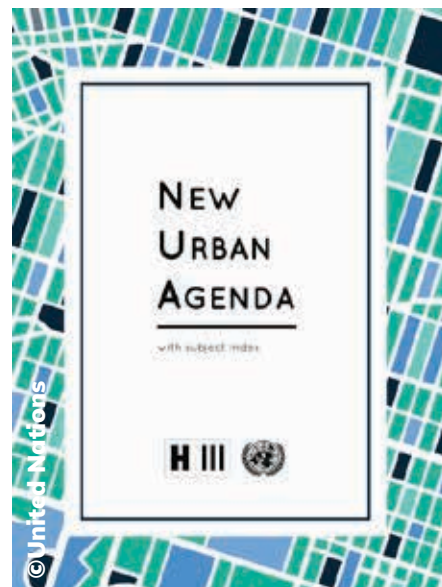
The NUA explicitly calls for food systems planning as a strategy for creating sustainable settlements. Signatories note the following:

We commit ourselves to promoting the development of urban spatial frameworks, including urban planning and design instruments that support sustainable management and use of natural resources and land, appropriate compactness and density, polycentrism and mixed uses, through infill or planned urban extension strategies, as applicable, to trigger economies of scale and agglomeration, strengthen food system planning and enhance resource efficiency, urban resilience and environmental sustainability (p.15, NUA).

Finally, with an intent to integrate food into urban and territorial planning, adherents commit to the following in the NUA:

We will promote the integration of food security and the nutritional needs of urban residents, particularly the urban poor, in urban and territorial planning, in order to end hunger and malnutrition. We will promote coordination of sustainable food security and agriculture policies across urban, peri-urban and rural areas to facilitate the production, storage, transport and marketing of food to consumers in adequate and affordable ways in order to reduce food losses and prevent and reuse food waste. We will further promote the coordination of food policies with energy, water, health, transport and waste policies, maintain the genetic diversity of seeds, reduce the use of hazardous chemicals and implement other policies in urban areas to maximize efficiencies and minimize waste (p.32, NUA).

The NUA’s language provides a clear signal for local and regional governments to not only integrate food into urban and territorial (spatial) planning but also to do so by thinking *systemically* (across the food system) and across systems



(food, energy, water). The NUA's support for food systems planning indicates local and regional governments' growing support worldwide to engage in efforts to strengthen and leverage food systems.

The efforts of city governments are especially notable, as many have taken responsibility in the food system sphere with little to no leadership from higher levels of government. In particular, the Milan Urban Food Policy Act (MUFPA),⁵³ which preceded the NUA, lays out an agenda for how city governments can show leadership in the arena of food systems. As of this writing, 180 cities have signed the MUFPP pact globally. The pact outlines seven key policy priorities of signatory cities:

1. We will work to develop sustainable food systems that are inclusive, resilient, safe and diverse, that provide healthy and affordable food to all people in a human rights-based framework, that minimise waste and conserve biodiversity while adapting to and mitigating impacts of climate change;
2. We will encourage interdepartmental and cross-sector coordination at municipal and community levels, working to integrate urban food policy considerations into social, economic and environment policies, programmes and initiatives, such as, inter alia, food supply and distribution, social protection, nutrition, equity, food production, education, food safety and waste reduction;
3. We will seek coherence between municipal food-related policies and programmes and relevant subnational, national, regional and international policies and processes;
4. We will engage all sectors within the food system (including neighbouring authorities, technical and academic organizations, civil society, small scale producers, and the private sector) in the formulation, implementation and assessment of all food-related policies, programmes and initiatives;
5. We will review and amend existing urban policies, plans and regulations in order to encourage the establishment of equitable, resilient and sustainable food systems;
6. We will use the Framework for Action as a starting point for each city to address the development of their own urban food system and we will share developments with participating cities and our national governments and international agencies when appropriate;
7. We will encourage other cities to join our food policy actions.

The MUFPP is a symbolic act indicating city governments' interest in advancing food policy. Although the intent is clear, as evidenced by MUFPP, how exactly are city and other local governments adopting policies to strengthen and leverage food systems? Answering this question is challenging for at least two reasons. First, as noted in the literature review, there are few international studies of food planning at the local, municipal, or regional scales.

Second, the nature of planning at the local scale varies considerably, which makes classification (and detailed study) of food systems planning nearly impossible. Nonetheless, in this section we offer a few examples from around the globe of how local governments are strengthening and leveraging the food system for residents' well-being. We draw on literature and databases that collate and curate local government policies. Note that significantly more food policy activity is evident in HICs, though local governments in LMICs are beginning to engage as well.

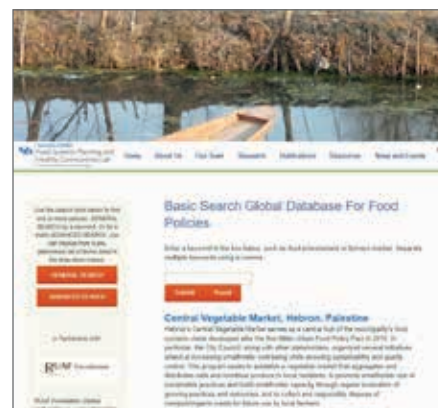
In the United States of America, for example, more than 300 local governments report some level of engagement in planning and implementing strategies to strengthen food systems. A database maintained by the national Growing Food Connections initiative lists approximately 200 local government policies and plans to strengthen food systems (www.growingfoodconnections.org). Another global database, maintained by a partnership of the RUAF Foundation^{vi} and the University at Buffalo, shows more than a dozen policies adopted by local governments around the world, although many more certainly exist. We list selected examples in Tables 3.1 and 3.2. Interested readers can obtain additional examples directly from the two searchable, free databases, one focused on the United States^{vii} and the other global.^{viii}

The examples in the tables illustrate how local governments across various jurisdictions are using different policy tools to strengthen and leverage their food systems. The policy tools include formal plans (Cagayan de Oro, Philippines; Region 5, Minnesota, United States of America; multistate Delaware Valley Region, United States of America; and Austin, Texas, United States of America); regulations (Boston, Massachusetts, United States of America); zoning bylaws (Buffalo, New York, United States of America); financial incentives and mechanisms (New York, New York and Cabarrus County, North Carolina, United States of America); and programs (Mexico City, Mexico and Cape Town, South Africa) that tackle topics ranging from agriculture to food insecurity and everything in between in the food system. Some policy tools are “hard” policies in that they carry the power of law, while others are “soft” plans that largely include information and ideas that are not actually *enforceable* through law. Still, all of these policy tools signal a shift in how food systems are viewed within a local government policy landscape.

The illustrative policy examples offered in this section are not generalizable across places. Rather, these policy tools are sensitive to local contexts, responding to the assets, needs, and challenges within each jurisdiction.



Growing Food Connections Searchable Database on Local Government Plans and Policies for Food Systems in North America | Partnership of Cultivating Healthy Places, University at Buffalo, Ohio State University, American Planning Association



Global Database on Local Government Plans and Policies for Food Systems Across the Globe | Maintained by RUAF and University at Buffalo

^{vi} RUAF is a Center of Expertise and Global Partnership on Sustainable Urban Agriculture and Food Systems.

^{vii} <http://growingfoodconnections.org/tools-resources/policy-database/>

^{viii} <http://foodsystemsplanning.ap.buffalo.edu/resources/global-database-for-food-policies/>

Table 3.1 Local government planning and policy for food systems in the United States of America

<p>POLICY TYPE Regional Food System Plan</p> <p>NAME OF POLICY Eating Here: Greater Philadelphia's Food System Plan⁵⁴</p> <p>ADOPTING JURISDICTION Greater Philadelphia Region, Pennsylvania and New Jersey^{ix}</p>	<p>SCOPE Now considered a landmark regional food system plan, the Delaware Valley Regional Planning Commission released this plan in 2011 after conducting a detailed regional food assessment. The regional food system plan provides a comprehensive overview of opportunities to strengthen the regional economy and bolster the agricultural sector, decrease food waste, improve the local ecology, and increase public health within the 100-mile food-shed (161 km) of greater Philadelphia.</p> <p>OBJECTIVES The food system plan seeks to address challenges across food system sectors, including agriculture, consumption, and waste management. The plan includes six primary objectives: (i) access to affordable farmland; (ii) natural resource protection through markets; (iii) agricultural enterprise development; (iv) healthy food awareness and access; (v) school system solutions; and (vi) regional convening and increased collaboration. The plan prioritized policy reforms, expansions of current programs, and new food systems innovation.</p>
<p>POLICY TYPE Financial Incentives Combined with Zoning Incentives</p> <p>NAME OF POLICY Food Retail Expansion to Support Health (FRESH) Program⁵⁵</p> <p>ADOPTING JURISDICTION New York, New York</p>	<p>SCOPE Launched in 2009, FRESH aims to establish and retain grocery stores in underserved areas of New York City to improve access to healthy, fresh, and affordable food. The program is an inter-agency effort that includes the NY City Economic Development Corporation, NY City Department of City Planning, the NYC Department of Mental Health and Hygiene, and the Office of Deputy Mayor for Health and Human Services.</p> <p>OBJECTIVES The city offers financial and zoning incentives to grocery store operators opening new locations, operators renovating or expanding existing retail space, and developers seeking to construct, renovate, or expand retail space for lease or purchased by a full-line grocery store operator. Financial incentives include abatement of land taxes, stabilization of building taxes, exemption on sales taxes, and deferral of tax on mortgage recording tax. Zoning incentives include increased building density, reduction in parking area requirements, and designation of larger stores as 'by-right' in manufacturing zoning districts.</p>

^{ix} The Delaware Valley Regional Planning Commission does not have the formal authority to adopt a plan, but instead, the plan offers a vision for the local governments within its jurisdiction.

POLICY TYPE

Comprehensive City Plan^x

NAME OF POLICY

Imagine Austin:
Comprehensive Plan⁵⁶

ADOPTING JURISDICTION

Austin, Texas

SCOPE

This city government adopted a comprehensive plan in 2012, which outlines strategies for strengthening the food system in its section on health.

OBJECTIVES

The plan recognizes that “[a] community’s overall health is affected by the quality of the built and natural environment, as well as the services available.” The plan outlines two specific policy objectives tied to food access. One policy objective aims to “promote the availability of and educate the community about healthy food choices, including ‘slow food’ (local food traditions, small-scale food processing, and organic agriculture) and nutrition education programs” (p. 171) and the second policy objective aims to “provide broad access to fresh foods, local farmers markets, co-ops, grocery stores, community gardens, and healthy restaurants in neighborhoods” (p. 172). The plan calls for the implementation of a Healthy Austin Program that would undertake a number of actions including revising the city’s land development code to “make it easier to produce and access healthy, sustainable food and to lead a more active lifestyle” (p. 205).

^x Comprehensive City Plans are also called Master Plans or General Plans.

POLICY TYPE**Sustainability Plan****NAME OF POLICY****Greenworks: A Vision
for a Sustainable
Philadelphia⁵⁷****ADOPTING JURISDICTION****City of Philadelphia****SCOPE**

First launched in 2009 by the Philadelphia Office of Sustainability, the Greenworks initiative seeks to promote sustainability across the city through targeted actions in food, energy, environmental, and economic systems. Under new mayoral leadership, the Office of Sustainability released the updated Greenworks vision document in 2016, which refreshes previously established goals and tactics into a long-term sustainability plan. The new plan includes input from residents, community groups, issue experts, and implementation partners, as well as new tools to share up-to-date information on sustainability data across neighborhoods.

OBJECTIVES

The Greenworks vision document is built around eight domains necessary to build a more equitable and efficient city: access to healthy, affordable, and sustainable food and water; clean air; affordable clean energy; preparedness for climate change and extreme weather conditions; increased green spaces; access to safe, affordable, and low-carbon transportation; waste reduction; education; and employment. Under guidance from the plan, and with funding from the Environmental Protection Agency, city departments are collaboratively implementing a brownfield assessment program within the city. Under this program, vacant lots will be analyzed for suitability for urban agriculture and green stormwater infrastructure. Further, the plan provides recommendations for the Philadelphia Office of Planning and Development to “include open space and urban agriculture in planning for housing, and take advantage of the Land Bank as a tool to preserve local food production” (p. 8), and to the Philadelphia Department of Parks and Recreation to continue ongoing partnership with FarmPhilly, a local organization that creates and maintains urban agriculture projects on Parks and Recreation-owned land.

POLICY TYPE**Zoning code****NAME OF POLICY****Unified Development Ordinance, Chapter 496⁵⁸****ADOPTING JURISDICTION****Buffalo, New York****SCOPE**

Buffalo's zoning code, adopted into law in 2017, is a form-based zoning code that aims to use physical form, rather than separation of land uses, to guide development. It integrates different urban areas into a unified whole while also streamlining new development standards and protecting historic buildings and sites within the City of Buffalo.

OBJECTIVES

Buffalo's Unified Development Ordinance allows for agricultural land use within the city, including specific regulations for community and market gardens and their related on-site structures. The ordinance also includes land use policies allowing space to be used for farmers' markets, mobile vending, forms of urban agriculture, supermarkets, and healthy corner stores.

POLICY TYPE**Regional Sustainability Plan****NAME OF POLICY****Creating a Resilient Region: The Central Minnesota Sustainable Development Plan, 2012⁵⁹****ADOPTING JURISDICTION****Cass, Crow Wing, Morrison, Todd and Wadena counties (also called Region 5), Minnesota****SCOPE**

This regional sustainability plan, unveiled in 2012, resulted from a multi-year planning process involving public, civic, and private sector stakeholders. In 2010, the Region Five Development Commission (R5DC) received a 1.8 million USD sustainable planning grant funded by the federal government (US Department of Housing and Urban Development, Department of Transportation, and the Environmental Planning Agency) to develop a regional strategic plan for the largely rural region of five counties.

OBJECTIVES

The plan aims to improve the region and residents' opportunities through ownership and environmental stewardship by preserving, enhancing, and managing the region's natural resources. The plan integrates sustainability into housing, transportation, natural resources, healthcare, and economic development. Food is addressed in both natural resources and healthcare sections. It explicitly identified "agriculture" as a key "economic engine" for the region and emphasized the need to promote the agricultural sector, specifically local foods. Plan implementation includes two projects explicitly related to food: a micro-lending program for startup and small businesses, including local growers, and a regional local foods distribution and processing facility.

POLICY TYPE

**Government Food
Procurement Policy**

NAME OF POLICY

**Cabarrus County
Local Food Purchasing
Policy⁶⁰**

ADOPTING JURISDICTION

**Cabarrus County,
North Carolina**

SCOPE

Adopted in 2010, the policy seeks to increase the vitality of the local food economy to promote job growth and increase access to nutritious food through the establishment of a local government policy that favors purchase of local foods for local government events.

OBJECTIVES

This policy intends to promote economic vitality while supporting the health of local residents and the sustainability of the natural environment. To do so, the policy stipulates that Cabarrus County Government Employees shall locally source at least 10 percent of all food served at county catered events and small department-sponsored meetings from food producers within North Carolina, and ensure that the food is sufficient, safe, and nutritious.

POLICY TYPE

Master Plan

NAME OF POLICY

**City of Marquette
Community Master
Plan⁶¹**

ADOPTING JURISDICTION

Marquette, Wisconsin

SCOPE

Adopted in 2015, the City of Marquette's Community Master Plan charts a 20-year development path for the city within a rural area. The plan addresses traditional planning topics such as land use, transportation, housing, and natural resources, as well as a relatively new topic on public health, which includes guidance on community food systems.

OBJECTIVES

Food is addressed as an objective in the community health section of the plan, but also integrated with other sectors such as economic development and transportation. Specific strategies in the plan include strengthening the city's position as a regional hub for food production and distribution, amending bylaws to support urban food production (including as interim use on public lands), and improved transit to food retail.

POLICY TYPE

Comprehensive Plan

NAME OF POLICY

Chautauqua 20/20
Comprehensive Plan⁶²

ADOPTING JURISDICTION

Chautauqua County,
New York

SCOPE

Adopted in 2011, this comprehensive plan for a rural county includes a section on agriculture/foods. The plan seeks to strengthen the county's food system through preservation of farmland, job growth, and infrastructure development.

OBJECTIVES

The top food-related priorities included in the plan include preserving farmland by identifying and maintaining priority agriculture districts, supporting right-to-farm laws, and implementing strong agricultural zoning (bylaws). Other strategies include increasing agritourism, increasing industry and job growth in the agricultural sector, creating food systems infrastructure, such as a community kitchens or business incubators for artisanal foods, and improving education to facilitate new career paths for the county's youth.

POLICY TYPE

City-Region Climate Action
Plan

NAME OF POLICY

2015 Climate Action
Plan⁶³

ADOPTING JURISDICTION

City of Portland and
Multnomah County, Oregon

SCOPE

The 2015 Climate Action Plan is an updated to the city-region's landmark Climate Action Plan from 2009. The updated plan identifies twenty objectives, and more than a hundred actions to reduce carbon emissions and respond to climate change. Many of these are tightly linked to the city-region's food system.

OBJECTIVES

Specifically, the plan calls for a reduction of carbon-intensive foods (objective 8), reduction of food scraps sent to landfills by 90% (objective 9), and increased support of the local food system (objective 12).

Table 3.2 Local government plans and policies to strengthen food systems in low- and middle-income countries

<p>POLICY TYPE Plan</p> <p>NAME OF POLICY Nakuru County Integrated Development Plan, 2013–2017⁶⁴</p> <p>ADOPTING JURISDICTION Nakuru County, Kenya</p>	<p>SCOPE Adopted in 2013, the plan identifies priorities for allocating public resources for projects and programmes for several sectors, one of which is agriculture and rural development.</p> <p>OBJECTIVES The plan focuses on modernizing agriculture while maintaining sustainability through field extension services, new technology, irrigation, sustainability practices, and infrastructure development. It promotes increased production of value-added products and creating preference for local foods. Funding is also allocated for small-scale agriculture, the fishing sector, and wholesale and retail markets.</p>
<p>POLICY TYPE Plan</p> <p>NAME OF POLICY City Agriculture Development Plan, 2019–2022⁶⁵</p> <p>ADOPTING JURISDICTION Cayagan de Oro, The Philippines</p>	<p>SCOPE Adopted in 2019, the development plan builds on previous municipal plans by specifically targeting the city's agricultural sector. It identifies ways to increase the resiliency and adaptability of farmers in the face of changing weather patterns, develop key transportation infrastructure for increased market access, and implement measures to sustain decreased food insecurity.</p> <p>OBJECTIVES The plan seeks to achieve three primary objectives: (1) increase the productivity and competitiveness of the city's farming population; (2) develop employment opportunities in the agricultural sector; and (3) create strategies to encourage public and private investments in key agricultural areas in order to maximize the sector's growth. Once implemented, this plan is projected to influence the passage of ordinances regarding sustainable fishing practices, an affirmation of the Agriculture and Fishery Council's role in the City Development Council, the prohibition of the conversion of prime agricultural lands for other purposes, and the development of mechanisms to prime residential/commercial land for future agribusiness investments.</p>

POLICY TYPE**Sustainability Plan****NAME OF POLICY****Clarendon Local Sustainable Development Plan⁶⁶****ADOPTING JURISDICTION****Clarendon Parish, Jamaica****SCOPE**

Adopted in 2016, this comprehensive, long-term plan for the parish of Clarendon includes an assessment of current conditions of land use, water, agriculture and fisheries, as well as recommendations to be implemented in the future.

OBJECTIVES

The plan's primary objectives include increasing resilience to climate change and disaster through the construction of adequate physical infrastructure and sustainable management of natural resources, supporting a healthy population by providing adequate access to social services, and creating a strong, diversified economy built around agriculture as well as tourism and manufacturing. The plan uses agriculture as a mechanism for economic growth. Some examples include encouraging hotels to purchase from local farmers and the promotion of organic agriculture and sustainable tourism.

POLICY TYPE**Urban Agriculture Program****NAME OF POLICY****Urban Agriculture Program⁶⁷****ADOPTING JURISDICTION****Antananarivo, Madagascar****SCOPE**

Adopted in 2011, the program seeks to install micro-vegetable gardens within low-income neighborhoods in order to increase food security and produce income-generating activities.

OBJECTIVES

The program seeks to increase urban agricultural production to reduce food insecurity and malnutrition through a variety of initiatives. These initiatives include an exchange program between Malagasy and French students to increase knowledge of urban agriculture, the development of a nursery as an experimental space for seed germination, composting and technology use; and the introduction of vegetable gardens to public schools and social centers to increase agricultural education and access to nutritious food.

POLICY TYPE**Urban Agriculture Policy****NAME OF POLICY****Urban Agriculture
Policy 2007⁶⁸****ADOPTING JURISDICTION****Cape Town, South Africa****SCOPE**

Adopted in 2007, the policy aims to integrate urban agriculture (UA) into the fabric of the municipality. A guiding document, the objectives of the policy are to create an institutional framework for UA within city limits, clarify roles and responsibilities, and establish an UA assistance programme. The policy focuses on UA activities by the “poorest of poor” within city limits.

OBJECTIVES

The policy outlines an implementation strategy and government structure to support urban agriculture. The policy aims to integrate UA within spatial and physical planning, and calls for city government to identify and release public land for urban agriculture. The policy also calls for provision of municipally subsidized water for UA. To ensure broad and strategic support, the policy calls for fostering partnerships with multiple government and non-government entities.

POLICY TYPE**Food Gardens Policy****NAME OF POLICY****Food Gardens Policy
in Support of Poverty
Alleviation and
Reduction⁶⁹****ADOPTING JURISDICTION****Cape Town, South Africa****SCOPE**

Adopted by the Cape Town City Council in 2013, the policy builds on the broader 2007 UA policy to facilitate food production for the city’s low-income residents. Implementation, monitoring, and oversight rests with the city’s Social Development and Early Childhood Directorate (SDECD).

OBJECTIVES

The policy aims to improve the quality of life for low-income residents, establish criteria for the development of food gardens to alleviate food insecurity in low-income areas, facilitate collaboration among stakeholders, and mobilize resources to ensure sustainability of the policy. The policy directs SDECD to “create and maintain a database of existing food gardens” (p. 7), offer “training and capacity building for individuals or groups to start and maintain” (p. 7) gardens, contract service providers or community based organizations to support garden projects, and provide food gardening infrastructure such as tools and seeds.

POLICY TYPE

Urban Agriculture Program

NAME OF POLICY

Participatory Urban Agriculture Program (AGRUPAR)⁷⁰

ADOPTING JURISDICTION

Quito, Ecuador

SCOPE

Launched in 2002 by the Municipality of Quito, this program facilitates urban agriculture for enhancing income, nutrition, and food security among vulnerable residents (i.e., women, elderly, disabled, and rural residents).

OBJECTIVES

AGRUPAR emphasizes self-production of food as a way for residents to increase incomes, nutrition, and well-being. The program has secured over twenty-nine hectares of land in the Metropolitan District of Quito to facilitate agricultural production. Further, this program encourages participating individuals to sell surplus produce at “bioferias,” or spaces where healthy food has been proclaimed as a human right. As of 2018, seventeen bioferias have opened throughout the city, and offer citizens the option to purchase produce and obtain free health assessment information. AGRUPAR produces over 500 000 kilos of produce annually.

POLICY TYPE

Vacant Land Ordinance

NAME OF POLICY

Land Use Ordinance⁷¹

ADOPTING JURISDICTION

Camilo Aldao, Argentina

SCOPE

Adopted in 1996, this local government ordinance allows the municipality to take control of and manage vacant land.

OBJECTIVES

The ordinance allows the city to reclaim, adapt, and reuse vacant lots for urban agriculture, to prevent environmental degradation of lots within the municipality.

POLICY TYPE

Urban Agriculture Ordinance

NAME OF POLICY

Urban Agriculture Framework Ordinance⁷²

ADOPTING JURISDICTION

Lima, Peru

SCOPE

Adopted by the Municipality of Metropolitan Lima in 2012, this policy promotes urban agriculture as a strategy to promote food security, social inclusivity, and economic development within the province of Lima.

OBJECTIVES

The policy seeks to promote agriculture for sustainable development in the city by allocating economic resources to urban agriculture, developing workshops and training courses on biodiversity, encouraging responsible waste management, linking farmers to markets, increasing compost production, and improving the nutritional quality of food grown within the city.

POLICY TYPE

Urban Agriculture Bylaw

NAME OF POLICY

**Urban Agriculture
Bylaws⁷³**

ADOPTING JURISDICTION

Bulawayo, Zimbabwe

SCOPE

Adopted in 2008 by the Bulawayo City Council, the bylaws establish guidelines for urban agriculture to strengthen food security, alleviate poverty, facilitate job creation, promote urban greening and wastewater recycling.

OBJECTIVES

The policy establishes the right of any resident in the municipal area to practice urban agriculture activities as long as the activities do not cause harm to health, the environment, or create a nuisance in the municipality. The document also creates rules and regulations to be followed, to protect the environment, when cultivating farmlands and raising livestock. Additionally, the document includes ways to support urban agriculture through access to tax exemptions, water access, and seed access.

POLICY TYPE

Urban Agriculture Bill

NAME OF POLICY

**Nairobi City County
Urban Agriculture
Promotion and
Regulation Bill⁷⁴**

ADOPTING JURISDICTION

Nairobi, Kenya

SCOPE

Implemented in 2015, Nairobi City County's Urban Agriculture Promotion and Regulation Bill promotes the practice of urban agriculture in Nairobi City and County through strategic planning, government involvement, and task delegation to involved entities.

OBJECTIVES

Nairobi's bill seeks to increase food security, protect public health, and increase employment opportunities through value chain development, provide a regulatory framework for the practice of agriculture in the county, delegate responsibilities for agriculture within county government, establish the Nairobi City County Urban Agriculture Promotion Advisory Board, and anticipate the future creation of a strategic plan for agriculture in the city and county.

POLICY TYPE

Law

NAME OF POLICY

**Ley Municipal
Autonómica N°
105 de Seguridad
Alimentaria⁷⁵
Autonomous Municipal
Law #105 of Food
Security**

ADOPTING JURISDICTION

La Paz, Bolivia

SCOPE

Enacted in 2014, this policy aims to guarantee the citizens of La Paz the right to food. The policy aims to strengthen the food system by strengthening agriculture, animal husbandry, and fisheries, as well as aggregation, processing, and distribution and consumption of food.

OBJECTIVES

The policy aims to support the establishment of a local government Food Security Office, lead a regional Food Security Network to improve food access, strengthen the city's farmers' markets to improve farmer well-being and residents' food access, and, expand the Food Education Program and Urban Agriculture Program.

POLICY TYPE

Health Program

NAME OF POLICY

**El Programa Estaciones
Saludables⁷⁶**

ADOPTING JURISDICTION

Buenos Aires, Argentina

SCOPE

Launched in 2012 by the Buenos Aires city government, this program aims to increase health equity for city residents through improved access to healthcare services, preventive medicine, and nutrition education.

OBJECTIVES

The program operates forty stationary and two mobile wellness stations in popular public spaces such as near public transportation stations, public squares, and parks. Residents can visit stations to receive health screenings and health information provided by doctors, nurses, and nutritionists. Some stations also offer nutrition counseling and access to healthy foods through on-site vending machines. Since 2012, the program has served over 1.2 million residents.

POLICY TYPE

Program

NAME OF POLICY

**Comedores
Comunitarios De La
Ciudad de Mexico⁷⁷**

**Community Dining
Program of the City of
Mexico**

ADOPTING JURISDICTION

Mexico City, Mexico

SCOPE

Implemented in 2018 by the Mexico City city government, the community dining-room program provides visitors with increased access to high-quality foods in a hygienic environment at affordable prices, while promoting a culture of healthy eating habits among residents. The program's intended audience includes all those who reside or travel through the city, but focuses particularly on residents of marginalized areas that experience high poverty rates and other inequities.

OBJECTIVES

The general objective of the program is to guarantee city residents access to high quality, nutritional foods. The program aims to use community kitchens to promote social and gender equity, social cohesion and solidarity among residents. Installed in 2009–2017, community kitchens were designed to provide non-perishable supplies that allow people to prepare meals. People who used the community kitchens were able to learn about ways to prepare hygienic, nutritious, and high-quality foods, and also access these foods at affordable prices.



4

A tropical scene featuring a dense grove of palm trees with lush green fronds. In the lower right, a small hut with a thatched roof is visible, partially obscured by the trees. The entire scene is reflected in a body of water in the foreground, creating a symmetrical effect. A semi-transparent teal banner is overlaid across the middle of the image, containing the title text in white.

CONTEXT MATTERS

CASE EXAMPLES FROM LOW- AND MIDDLE-INCOME COUNTRIES

CONTEXT MATTERS

All plans to strengthen and leverage food systems for broader community well-being work best when communities' on-the-ground experiences inform the plans. Innovation in one part of the globe cannot be replicated in another part, although people (and their local governments) can choose to study and distill the experiences of other places, use what is relevant for their own communities, and jettison what is not. People's agency in guiding the vision and solutions for food systems in LMICs is especially important since the contexts, opportunities, and challenges vary widely across the globe. To that end, we provide case studies of four communities from Jamaica, Ghana, and India (Figure 4.1) that illustrate the richness, uniqueness, and complexity as well as the opportunities and challenges of a community's food system. In addition to responding to local conditions, food systems planning must consider broader factors such as urbanization, climate change, and globalization, which have a considerable influence on communities' food systems.

The case study locations were selected from three different countries for several reasons. Key among these were the presence of strong partnerships with community stakeholders in each country. The case study locations also included diverse climates, cultural traditions, and local government structures. In addition, we selected cases that would allow us to demonstrate how local governments and partners may identify and build on *opportunity* within each site; enable the community to *innovate*; and in so doing promote *equity* for all stakeholders in the food system.

The case studies include the districts of Thiruvananthapuram and Khordha (India), the parish of Clarendon (Jamaica), and the Accra metropolitan area (Ghana) (Table 4.1).



Vegetable harvest in India

In India, two different cases, Thiruvananthapuram and Khordha, were selected to illustrate the varying stages of opportunity and innovation in food systems development in the same country. One site is from the southern state of Kerala, and the other is from the eastern state of Odisha. Kerala is well known for its progressive policies and has historically displayed strong food and health metrics. Odisha, on the other hand, has struggled to meet its people's food and health needs but has a strong history of grassroots action to impact policy change. Both places offer abundant opportunity, room for innovation, and the desire to promote equity.

For Jamaica, the report focuses on the largely rural parish of Clarendon, which is home to the small town of May Pen. Like all cases in this report, Clarendon offers abundant opportunity, innovation, and equity through its urban-to-rural linkages in the food system. It is also a place where local government planners have shown leadership in sustainability planning.

Figure 4.1 Location of case examples



Adapted from Map No. 4170 Rev. 18.1
United Nations
February 2020

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined.

*Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.



Last but not least, the Accra Metropolitan Area in Ghana, a well-studied region, illustrates the potential of planning for *urban* food systems under relatively complicated land tenure arrangements.

Information for the case studies is drawn from about 100 qualitative interviews conducted in 2018 with food systems stakeholders, including residents, local governments, and other community experts. The interviews with residents in each city were designed to elicit comprehensive documentation of their daily living practices (DLPs) within the food system. We asked residents about their experiences with growing, processing, marketing, acquiring (or buying), preparing, and eating foods. The interviews also probed how their food-related practices interfaced with ecological, social, economic, and policy systems in their communities.

A key sampling tactic involved interviewing residents who were also from smallholder farm households in urbanizing regions. In other words, our understanding of how the food system works—across the sectors of production, aggregation, processing, wholesale, retail, and consumption—is informed by the experiences of people who are both producers *and* consumers within their communities' food systems. A focus on smallholder farm households' experiences illustrates how well or how poorly a community food system works in each jurisdiction because farming households are better prepared (relative to other residents) to grow food for themselves, as well as better informed about the challenges of food production. If the food system does not work well for smallholder farmers, it is less likely to work for residents who do not have the knowledge to grow their own food.

Additional data for the case studies came from secondary sources such as the demographic, economic, and agricultural census as well as health and nutrition surveys in each country. Financial data in the report is reported in both local and US currencies. Currency was converted using the on-line calculator <https://www.currency-calc.com> on March 06, 2019 (e.g. 1 USD= 70 INR, 1 USD= 126.721 JMD).

Table 4.1 Case study summary information

 Case study location	 Population
Thiruvananthapuram (District)	3 301 427⁷⁸ (2011)
Khordha (District)	2 251 673⁷⁹ (2011)
Accra (Metropolitan area)	1 665 086⁸⁰ (2010)
Clarendon (Parish)	246 322⁸¹ (2012)

To the extent possible, the geographic scale of the data matched the scale and context of the case study jurisdiction. As a result, there is considerable variation in the types of variables that are reported across the case studies. Maps were prepared with the geographic information systems software, ArcGIS, using open-source data available for each country.

Finally, to amplify local voices and contextual experience each case study is co-authored by local scholars and/or local practitioners. Community stakeholders in each case study area also reviewed the case studies prior to publication.



Type of local government jurisdiction	City/urban area within setting	Country	Number of open-ended interviews completed ^{xi}
District	Thiruvananthapuram (city of)	India	22
District	Bhubaneshwar	India	16
Metropolitan area	Accra (city of)	Ghana	33
Parish	May Pen (town of)	Jamaica	33

^{xi} Interviews were conducted with various community stakeholders, including smallholder farmers, local government representatives, civil society representatives, and other food system stakeholders.

CONTEXT MATTERS

4.1 SUSTAINING URBAN FOOD SYSTEMS
IN THIRUVANANTHAPURAM, INDIA

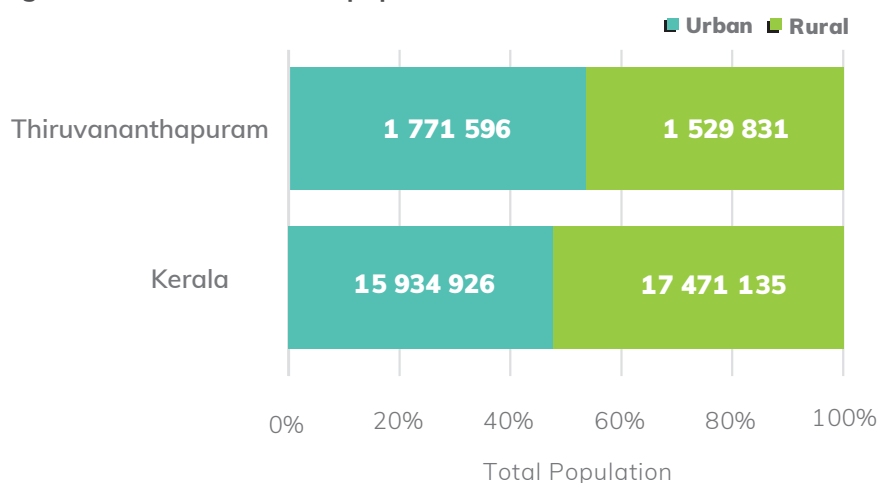
Figure 4.2
Location of Thiruvananthapuram District

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Home to over 3.3 million people in 2011, Thiruvananthapuram District is among the fastest urbanizing districts in the state of Kerala, which sits at India's southern tip on the Malabar Coast (Figure 4.2).⁷⁸ Thiruvananthapuram District is also home to the capital and the largest city of Kerala. Characterized as the most densely populated of all districts in the state, in 2011, Thiruvananthapuram had a population density of 1 508 persons per sq.km.⁷⁸

Thiruvananthapuram has transitioned from a predominately rural to a more urban district in the last two decades. Population growth data from 2001 to 2011 indicate a decline in the district's rural population by 29 percent, compared to an increase in the urban population by 62 percent. Consequently, while the district's population was 66 percent rural and 34 percent urban in 2001, this distribution shifted to 46 percent rural and 54 percent urban in 2011 (Figure 4.3).⁷⁸ This rapid urbanization has implications for the district's agriculture and food system. Agriculture has historically been the primary occupation of the people of Thiruvananthapuram, and despite rapid urbanization, agriculture and the food system continue to play a crucial role in the district's economy. However, shifting demographic, economic, and environmental factors have complicated this legacy and potential futures for farmers, especially smallholder farmers.

Figure 4.3 Rural and urban population, 2011



The local government’s planning and policy efforts to manage the impact of increasing migration from rural to urban parts of the district as well as the increased pace of agricultural land development are nascent. The state government has an established plan-preparation sequence at the district, block panchayat, and grama panchayat levels to work toward an Integrated District Development Plan (IDDP), which would include policy and infrastructure plans for physical, social, and economic development. In 2018, the Planning Committee of Thiruvananthapuram District had completed only the first of three phases. Furthermore, the proposed land use in the Thiruvananthapuram Master Plan for 2031 proposes significant transformation of agricultural land to residential and other developed uses in the city.

The local government leadership shows a desire to engage more

broadly in food systems planning, and the district boasts numerous opportunities that, when fully used, will position Thiruvananthapuram as a model for food systems planning.

Land use

Thiruvananthapuram is an urbanized district, relative to other parts of Kerala.⁸² Yet, agriculture is an important land use. In 2016–17, of the district’s 218 781 hectares (2 187.81 sq.km), the largest land use category was net area sown (58.96 percent), followed by forests (22.79 percent), and then non-agricultural uses (15.10 percent) (Figure 4.4).⁸³ The land use patterns are somewhat similar at the state level. Statewide net area sown is 51.86 percent of geographic area; forests comprise 27.83 percent; and non-agricultural uses account for 11.37 percent of the geographic area.

Climate

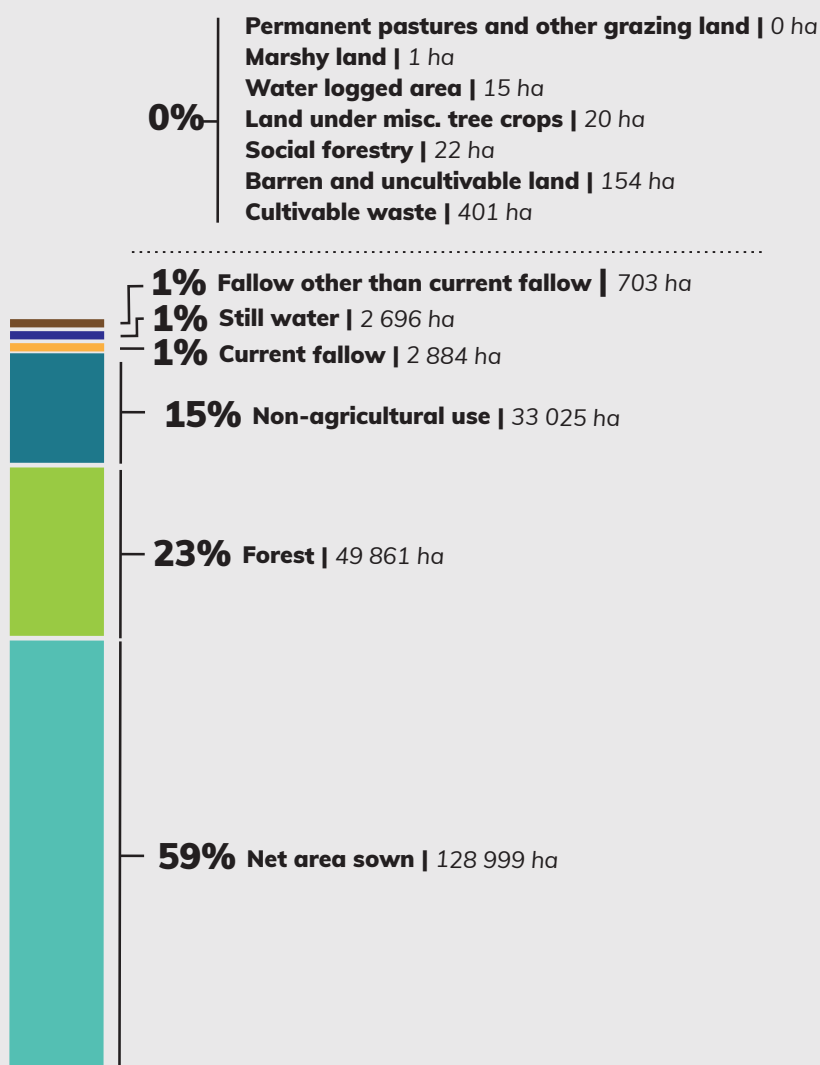
Thiruvananthapuram’s location, between the Western Ghats Mountains in the east and the Arabian Sea to the west, creates a three-tiered topography, including the cooler highlands of the mountains, the rolling hills of the central midlands, and the coastal plains of the western lowlands. About 69 percent of the district lies in the midlands, while highlands and lowlands account for 26 percent and 5 percent of geographic area, respectively. Wetlands and rivers are key to the district’s ecology and the food system, shaping the types of food products that are grown or harvested. The topographic and climatic diversity found, even at the district level, highlight the need for localized food systems planning.

For example, cash crops such as rubber, tea, cardamom, and other spices can be grown in the highlands, while paddy, tapioca, spices, cashews, vegetables, banana, and coconut are grown in the midlands and lowlands.⁸⁴

The district experiences temporal fluctuations in temperature and precipitation due to monsoons. Annual rainfall in the district is estimated at 1 500 mm. Reports from 2011 suggest that in the district, actual pre-monsoon rainfall was approximately 104 mm (lower than normal) from March to May, 286 mm (lower than normal) from June to September, and 28 mm (higher than normal) from October to December.⁸⁴ Precipitation data from 2016–17 indicate that rainfall has decreased from normal levels in every district, with Thiruvananthapuram experiencing a 46 percent decrease in rainfall, compared with an overall 35 percent decrease observed statewide.⁸³ Abnormally low precipitation threatens surface and groundwater resources, which are already vulnerable because of contamination and seawater intrusion.⁸⁴

Kerala experiences almost three times more rainfall than the national average, but the retention of water is low.⁸⁵ The 2017 Economic Review from the State Board of Planning indicates the state's low capacity to cope with the added stresses of climate change. Due to frequent weather fluctuations, farmers' input costs are rising, and natural resources, such as soil and water, are being degraded. Recent floods indicate the state food system's vulnerability to extreme weather events.

Figure 4.4
Land use in Thiruvananthapuram, 2016-17



Socioeconomic status and literacy rates

Recent data from 2011 suggest that the overall work participation rate in Thiruvananthapuram is approximately 37 percent.⁷⁸ The workforce comprises 1 231 669 workers in the district, of which 921 282 are main workers^{xii} and 310 387 are marginal workers. Approximately 63 percent of those eligible to work, including students, homemakers, and those participating in unpaid labor, are classified as non-workers.^{78, 79, 86} In terms of education, Kerala's strong educational infrastructure has enabled high levels of literacy in Thiruvananthapuram, which has a literacy rate of 93 percent. A slightly greater percentage of men (95 percent) are literate than women, whose literacy rate is 91 percent.^{78, 87}

Statewide, the unemployment rate of 12.5 percent (in 2015–16) in Kerala was still considerably higher than the unemployment rate of 5 percent for all of India.^{87, 88} Kerala has made progress in poverty reduction compared to other states, with a decline from 60 percent in 1973 to 11 percent in 2011.^{87, 88} However, poverty and high unemployment in rural and urban areas remain tied to the living conditions of smallholder farmers. Although agricultural workers in Kerala (both men and women) receive significantly higher average wages^{xiii} than agricultural workers in other states and in India overall, agricultural households in Kerala struggle to support themselves on farming income alone.⁸⁸



Low water levels in irrigation canal

According to data from 2012–13, in Kerala, only 35 percent of income was derived from cultivation, with the other 65 percent derived from other sources on average,⁸⁹ further illustrating the precarious position of smallholder farmers.

^{xii} The census of India groups workers into three categories: main workers are those who are engaged in economically productive activity for six or more months during the year, marginal workers are those working less than six months of the year, and non-workers are those who had not worked at all during the year preceding the date of enumeration.

^{xiii} Data from June 2015 reveal that the average daily wage rate for male and female general agricultural workers was 590 INR (approx. 8 USD) and 410 INR (approx. 6 USD) based on December 2019 conversion rates, respectively.

Public health

Thiruvananthapuram tends to have better public health outcomes compared to districts in other parts of India. As a state, Kerala has lower hunger and food insecurity than many states in India. An index^{xiv} developed by the International Food Policy Research Institute (IFPRI) in 2006 reported Kerala's hunger index to be 17.5, which was better than the highest index in the country (in Madhya Pradesh at 30.8) but worse than the lowest index (in Punjab at 13).⁹⁰

Nonetheless, conditions are challenging. Thiruvananthapuram district has an infant mortality rate (IMR) of ten deaths per 1 000 children (live births) under one year old, which is much higher compared to the statewide IMR of 5.59. Furthermore, there is a tremendous disparity between the IMR rates of the urban and rural populations. In 2016, the IMR of Thiruvananthapuram's rural population was 12, whereas that of the district's urban population was two in 1 000 live births.⁹¹ Recent data from 2015–16 suggest that 19.5 percent of children under the age of five in the district are stunted in terms of height for age, which is a sign of poor nutrition.^{92, 93}

While basic nutrition continues to be a challenge for many, diet-related chronic diseases are growing as well, creating a 'double-burden' on the population. For example, data suggest that 9 percent of women in the district have a body mass index (BMI) below normal, yet 34 percent of women are overweight or obese (Table 4.2).⁹² Similar patterns are

evident for men. Reports from the 2015–16 District-Level Household and Facility Survey indicate that 8 percent of adult^{xv} men and 5 percent of adult women were hypertensive. In terms of diabetes risk, 13 percent and 10 percent of adult men and women, respectively, reported high blood sugar levels.⁹²

Local government structure

The national government and constitution delineate local government structure and planning functions in Kerala. The Constitution of India outlines the responsibilities of each level of government within the three-tier system: central, state, and local. However, few guidelines on the activities of local self-governments (LSGs) existed until attempts to institutionalize the process of decentralized participatory planning culminated in the 73rd and 74th Constitutional Amendment Act (CAA) in 1992. Subsequently,

the devolution of powers to the LSG bodies, namely Panchayati Raj Institutions in rural areas and urban local bodies in urban areas, has occurred in order to advance accountability at the grassroots level and acknowledge the need for a more localized approach in development planning.

Kerala is viewed as a successful model, with an established District Planning Committee serving as a bridge between the state and LSGs, and 40 percent of the state funds dedicated to the LSGs. The state of Kerala is divided into 14 administrative units called "districts" for ease

^{xiv} The India State Hunger Index is based on the estimated proportion of population that does not consume enough calories, the proportion of underweight children below the age of five, and the mortality rate among children below the age of five.

^{xv} Adults are defined as individuals between 15–49 years.

Table 4.2
Body mass index (BMI) patterns in Thiruvananthapuram, 2015–16⁹²

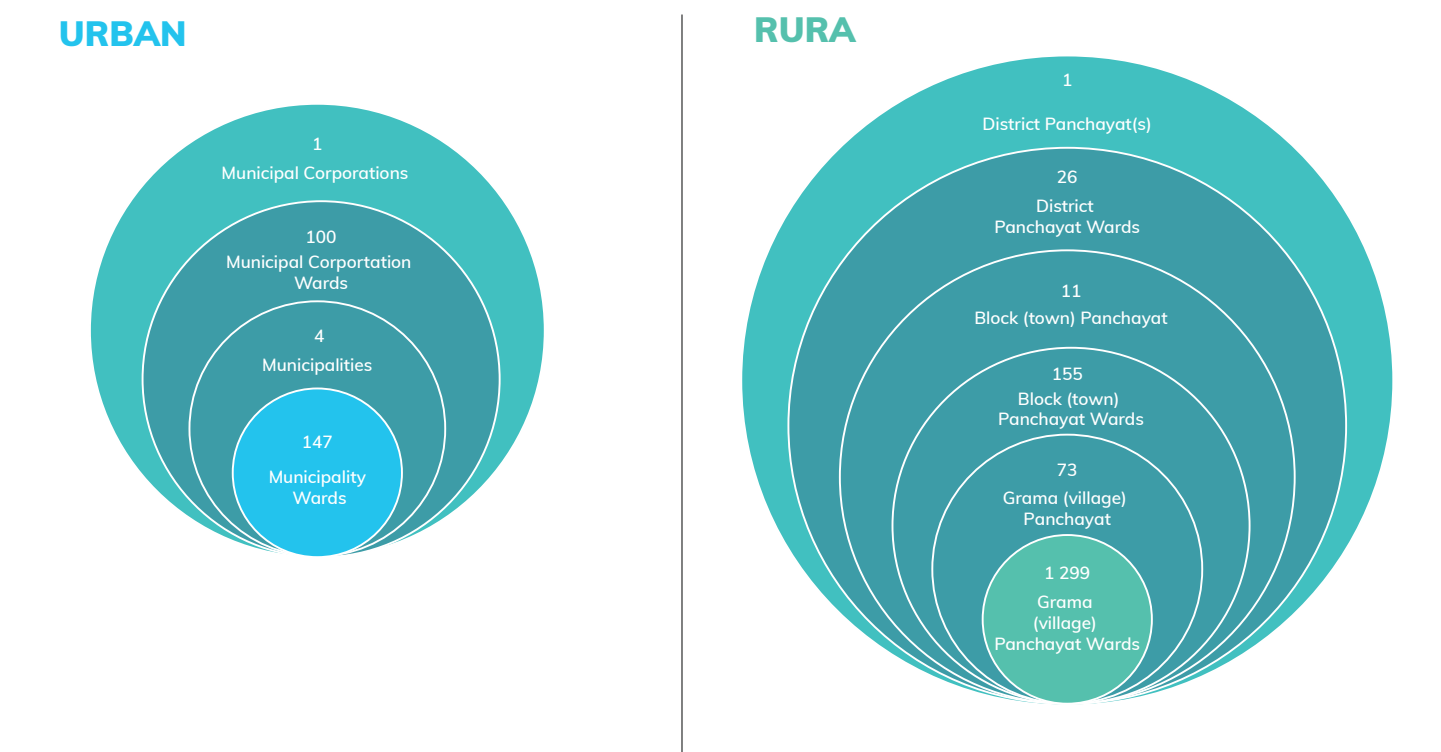
	Individuals who are underweight (BMI < 18.5 kg/m ²) (%)		Individuals who are overweight or obese (BMI ≥ 25.0 kg/m ²) (%)	
	WOMEN	MEN	WOMEN	MEN
URBAN	10.0%	6.0%	30.0%	26.7%
RURAL	7.7%	6.6%	37.6%	23.0%
TOTAL	9.0%	6.2%	33.6%	25.2%

of planning and administering funds. Thiruvananthapuram district, the case study district, has a unique cultural, social, and political character, with variations in language accent and culinary style. Rural and urban areas of districts are further divided into governance and administrative areas, and also have their own elected representatives.⁹⁴ Table 4.3 illustrates local government entities, down to the most decentralized structure in Thiruvananthapuram. Any effort to rebuild and strengthen food systems must account for these nested structures of local governments, all the way from the local panchayat level to the central/federal level.

Planning functions vary across administrative units.^{xvi} In June 1993, the 74th Amendment Act of the Constitution of India mandated the creation of two planning committees, the District Planning Committee (DPC) and the Metropolitan Planning Committee (MPC), the latter representing the common interest of municipalities and panchayats.

^{xvi} The state-district-panchayat (or, corporation) governance hierarchy is an attempt to foster devolution of planning and governance to the local level, yet a parallel administrative hierarchy tied to revenue generation, specifically, the state-district-taluk-village hierarchy, still remains intertwined in the planning process. For example, land records are linked to revenue records (and revenue-based administrative hierarchy), while planning, development, and programming are led by local self-governments and their agencies. This causes confusion for residents, who have to navigate these intertwined systems.

Table 4.3
Local government nested structures in Thiruvananthapuram District, 2011⁸⁴



Together, the DPC and MPC are charged with working together to develop an Integrated District Development Plan for each state.

In Kerala, the Department of Town and Country Planning has developed a sequence for plan preparation at the district level, including a (1) District Urbanization Report (DUR), (2) District Spatial Plan (DSP), and (3) Integrated District Development Plan (IDDP). The DUR lays out a framework for developing and connecting urban with rural areas; the DSP defines development goals by delineating general policies and strategies; and the IDDP includes a Perspective Plan for 15–20 years that outlines a policy and infrastructure plan and a five-year Execution Plan that specifies strategies for physical, social, and economic development as well as development regulations. The DPC of Kollam was the first in the country to develop a District Development Plan as envisaged by the National Constitution, and the plan was released in August 2009. The experience, success, and lessons learned in Kollam District will serve as a model for remaining districts in Kerala.

None of the statewide planning frameworks describe how local governments might integrate food systems into planning.

Economy

The district has a diverse economic base comprising primary, secondary, and tertiary sectors.^{xvii} The primary sector generates about 8 percent of district value added output,

while the secondary and tertiary sectors generate 27.8 percent and 64.3 percent, respectively (Figure 4.5).⁸⁷

The district's food system is part of primary, secondary, and tertiary sectors, contributing to all parts of the economy. Food production operations, such as farming and fishing enterprises, contribute to the primary sector (and generate 7.6 percent to overall value added output), food processing and manufacturing establishments contribute to the secondary sector, and food distribution operations (such as restaurants) contribute to the tertiary sector. Unfortunately, data about the contribution of the *aggregated* food system to the district's economy district does not exist. Strengthening economic linkages among food establishments across primary (e.g., farmers),

secondary (e.g., food processing), and tertiary sectors (e.g., restaurants) would yield greater economic return to the district.

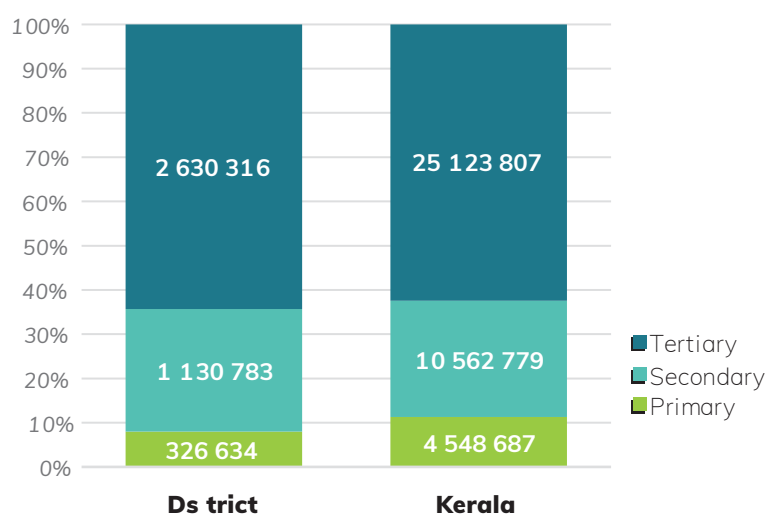
Agriculture

There were 750 903 agricultural operational holdings^{xviii} in Thiruvananthapuram District in 2010–11, which made up 11 percent of all operational holdings in Kerala.⁹⁵ Smallholder farmers encompass the vast majority of holdings and land area under cultivation. Overall, smallholder farmers, defined as those cultivating less than or equal to two

^{xvii} Primary sector includes agriculture and mining and quarrying; secondary sector includes manufacturing, electricity, gas, and other utility companies, and construction; tertiary sector includes trade, hotels, and restaurants, financial services, and public administration services.

^{xviii} The agricultural census defines an operational holding as all land that is cultivated or operated wholly or partly for agriculture by a person, group of people, or institution.

Figure 4.5 District and state value added output (lakh INR), 2014–2015



hectares, cultivated on 99 percent of all holdings within the district, which accounted for 93 percent of the total land area of all operational holdings in Thiruvananthapuram in 2010-11.⁹⁵ Within the domain of smallholder farmers, operational holdings below one hectare vastly outnumber those between one and two hectares; 99 percent of holdings are under one hectare, and less than 1 percent of holdings are between one and two hectares. In terms of *actual land area*, holdings below one hectare are 82 percent of the total, and holdings between one and two hectares are 10 percent.⁹⁵

Thiruvananthapuram shows similar trends in cropping patterns to those of the state overall. The number-one food crop cultivated in the district in 2016-17 by proportion of net sown land area is coconut (54 percent), followed by tapioca (11 percent) (Table 4.4). Note that nearly one-quarter of net sown area is cultivated with rubber, which of course is not a food crop.

The net sown area dedicated to rice production is minimal (1 percent). Although key to the district's food and dietary culture, paddy cultivation has been declining statewide at an alarming rate since the 1980s. Statewide, area sown for rice across all seasons dropped from 882 000 hectares in 1974-75 to only 171 398 hectares in 2016-17.⁹⁵

In Thiruvananthapuram District, 7.67 percent (5.81 percent men, 1.86 percent women) of the district's 1 231 669 workers are agricultural laborers (those who work on the land of others), down from 13 percent in

Table 4.4 Agricultural crops in Thiruvananthapuram District, 2016-17⁹⁶

Crop	Thiruvananthapuram Net cropped area = 128,999 hectares			
	Area (Ha)	Net Cropped Area (%) ^{xix}	Production (MT)	Production (millions of numbers)
Coconut	70 467	54.63	-	573
Rubber	32 200	24.96	31 000	
Tapioca	14 628	11.34	520 143	
Plantain	6 748	5.23	60 035	
Jackfruit	6 686	5.18	-	25
Mango	4 695	3.64	29 461	
Banana	2 776	2.15	19 826	
Pepper	2 177	1.69	846	
Papaya	1 766	1.37	15 352	
Paddy (rice)	1 392	1.08	3 069	
Cashew	1 043	0.81	255	
Arecanut	1 004	0.78	599	
Tea	962	0.75	94	
Ginger (cured)	89	0.07	261	
Turmeric (cured)	72	0.06	156	
Coffee	-	-	-	
Cardamom	-	-	-	

^{xix} The total does not add up to 100 percent, as multiple crops can be grown on the same piece of land.



Smallholder farmer from Thiruvananthapuram

2001.⁷⁸ Cultivators (those who work their *own* land) comprise 3 percent (2 percent men, less than 1 percent women) of the worker population, down from 4 percent in 2001.^{78, 95}

Existing innovative initiatives strengthening the food system

Headquartered in Thiruvananthapuram, Thanal is a non-governmental organization of environmental activists dedicated to sustainable resource management and agriculture, as well as environmental and human health. The group was founded in 1986 with the intent to raise environmental awareness, primarily in schools and colleges. Since then, Thanal has grown and expanded, drawing attention to a range of environmental and population health challenges, such as pesticide use and related illnesses, increasing deforestation, improper handling of urban waste, climate change, and more. Today, Thanal's leadership is evident in several districts across Kerala and in other parts of India.⁹⁷

Thanal implements various programs to strengthen the food system. One program area centers on agriculture and food sovereignty, including efforts to restore and protect biodiversity, agrobiodiversity, and the environment; enhance incomes for farmers and their households; and promote food safety and security for consumers. Hundreds of smallholder farmers are trained in organic farming and then linked to markets through Thanal's social

enterprise, Organic Bazaar. Through the Living Ecosystems program, Thanal is also actively working to conserve agricultural land through policy advocacy and campaigning to build policymakers' awareness of sustainable, just, and equitable land preservation. Thanal's work has contributed to the formulation of the Wetland and Paddy Land Conservation Act, Organic Farming Policy, and other policies in Kerala as well as other landmark campaigns that include Ban Endosulfan, Save our Rice, and Zero Waste Himalayas.

Sanghamaithry Farmers Producer Co Ltd. Kerala (SFPCK) is a farmer-producer cooperative that is strengthening the food system in Thiruvananthapuram by connecting several food system sectors, including production, aggregation, processing, wholesale, and retail. Established as a farmer-producer cooperative in 2003, SFPCK expanded in July 2011, after the Parliament of India amended the Companies Act with a new provision allowing a hybrid model combining a private limited company and a cooperative society. This model gives small-scale primary producers, including smallholder farmers, better access to markets and prevents organizational obstacles posed by cooperative societies.⁹⁸ Also referred to as Sanghamaithry, the cooperative business is member-based, with an estimated 170 employees and 6 500 farmer members (including 100 shareholders), and covers approximately 50 panchayats in the district. Farmer members carry out food production, followed by aggregation, which occurs at Sanghamaithry headquarters and

Hundreds of smallholder farmers are trained in organic farming and then linked to markets through Thanal's social enterprise, Organic Bazaar.



Thanal information booth

its 28 food hub locations; at these locations, farmers drop off their produce to be stored in a cold storage facility, placed in ripening chambers, or put up for sale. Processing is a small part of the overall business, which includes the processing of banana chips and packaging of flour that is milled elsewhere. Wholesale buyers travel from as far as 200 kilometers away and retail customers from surrounding areas come to purchase farm products, such as bananas, elephant yams, string beans, mango, and papaya. In addition to its retail units at headquarters and hub sites, SFPCCK operates 18 retail sites and five mobile vending trucks in locations with regular foot traffic.⁹⁹

Sanghamaithry membership requires farmers to (1) pay a one-time membership fee, (2) serve as full-time producers, and (3) meet a minimum farming quota per year. For each sale, SFPCCK farmer members immediately receive 95 percent of the profit, while the remaining 5 percent goes back to Sanghamaithry (2.5 percent for establishment fees and 2.5 percent for end-of-year bonuses before the Onam holiday, educational scholarships for children of farmer members, and medical support). In a rapidly urbanizing district, SFPCCK supports a significant proportion of farmers by facilitating a uniquely stable market for farm products. With real-time management of supply (from farmers) and demand (from wholesale, retail, and individual buyers), farmers benefit from cash on delivery of produce, with stable or above market prices; an annual bonus; farmer training; and additional support for children's

education, medical expenses, and retirement.¹⁰⁰

An important, but often overlooked, innovation in Thiruvananthapuram's food landscape is the homestead farm or garden in meeting food production goals in the rapidly urbanizing district. Homestead farms are an integral part of the agricultural and cultural landscape in Kerala, and especially so in Thiruvananthapuram. Homesteads refer to family farms where food production areas surround the home of the farmer. Traditionally, such lands produced an array of crops — tree crops, food crops, plantation crops, seasonal and biennial crops — all in an intense biodiverse system near the homes of the farmers. Even cattle, poultry, and fish are raised on homestead farms and gardens.

Past studies affirm the multi-cropping patterns of homestead farms; a 1997 study of 400 home gardens in the district reports between five and forty crop and tree species on a single homestead in the district.^{101, 102} Indeed, interviews and site visits with homestead farm operators reveal a variety of crops continue to be grown for the family's own consumption, using sustainable practices including integrated pest management (IPM). For example, one homestead farmer grows tapioca, turmeric, bitter melon, gourds, string beans, bananas, coconut, chili, and eggplant on two acres of farmland surrounding his house in a residential neighborhood in the district. The farmer also raises a few turkeys and cows. Previously used as a rubber plantation, the land is now farmed using a variety of sustainable growing practices

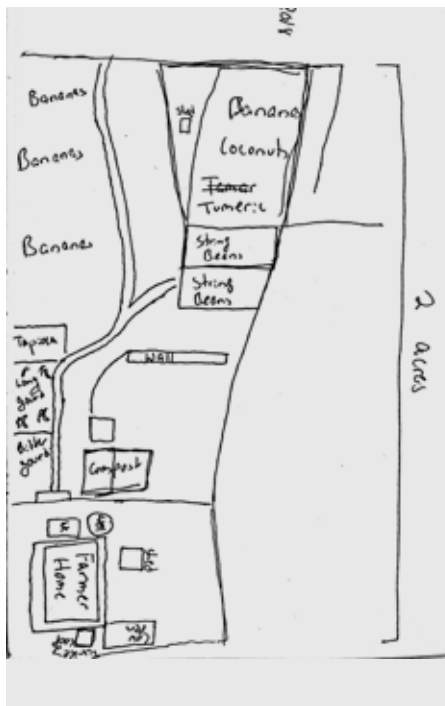


SFPCCK retail store

Sanghamaithry gives small-scale primary producers, including smallholder farmers, better access to markets and prevents organizational obstacles posed by cooperative societies.

including crop rotation, home-made traps for managing pests, and reuse of biodegradable waste for soil enrichment (Figure 4.6). The farmer reports 80 percent of vegetables and tubers consumed by the family is obtained from their own farm while about 20 percent is purchased at the store.¹⁰³ Despite its potential to improve diets in an urbanizing area, homestead farming has been largely ignored in agricultural land use discussions.

Figure 4.6 Sketch of homestead farm in Thiruvananthapuram District



Vegetables on Homestead farm in Thiruvananthapuram District

Policy initiatives: planning for development in Thiruvananthapuram District and City

In partnership with community organizations, local governments in the district and city are moving forward on numerous actions to strengthen food systems, even though planning frameworks are somewhat limited, as described below.

For the capital city of Thiruvananthapuram, the government sanctioned the first official development plan in 1971 and again in 1993. Since then, the city has grown significantly beyond the geographic limits of the previously sanctioned plans, necessitating a new master plan that was drafted and published in November 2012 by the Thiruvananthapuram Corporation and the Department of Town and Country Planning.¹⁰⁴ The Thiruvananthapuram Master Plan (draft) includes strategies related to the conservation of green space, improvement of road networks to decongest the urban core, development of transportation infrastructure, construction of two new towns at the edges of the city, growth in information technology and tourism as the future economic base of the city, and more sustainable biodegradable waste management. The 2012 draft Master Plan remains to be finalized, and initiation of a new master plan is uncertain. The plan does not explicitly outline strategies for strengthening the food system.

A district urbanization report for Thiruvananthapuram District was

published in January 2011, which includes a summary of the district's population, occupational structure, land use, settlements, urban profile, and road network connectivity.¹⁰⁵

Aside from these formal reports and plans, the district leadership is engaging with like-minded organizations in the public and private sectors and with citizens – especially youth – to address climate change challenges and strengthen the district's food system. Under the Change Can Change Climate Change (C5) initiative, launched in 2018, a number of projects are building citizen and organizational capacity to transform dumpsites to green community spaces, create urban organic farms, and promote the adoption of sustainable lifestyle practices in one's daily life through the Green Protocol.

Challenges and lessons

Historically, the voice of smallholder farmers has been neglected in favor of a top-down policy and planning approach in India. Consequently, smallholder farmers have been forced to compromise their lives and livelihoods in order to adapt to the challenges presented by detrimental farm/land policies, globalization, urbanization, and climate change. The history of the urban and regional food system (URF) in Kerala and India as a whole provides great insight into the source and nature of the challenges that smallholder farmers currently face.

The Green Revolution, which revolutionized food production across the world, is key for understanding how and why smallholder farmers

Samrudhi, an urban organic cultivation project of C5, aimed to transform 75 urban plots to urban organic farms in Thiruvananthapuram District. Community members receive training and work alongside full-time farmers to cultivate the urban organic farms. Harvested crops are celebrated with a harvest festival in the community and sold at markets by community members at a slightly higher price than non-organic crops.

Sthithi, a project of C5, aims to promote the adoption of green and sustainable lifestyle practices among all citizens through the reduction of food-related waste, such as plastic. The Green Protocol delivered awareness programs in select institutions during Climate Education Week in December 2018 and named fifteen teams of students as Climate Ambassadors of Thiruvananthapuram District. Sthithi works to encourage hotels and restaurants to reduce the generation of non-biodegradable waste and their carbon footprint by using biodegradable materials.

have been historically neglected in URF planning discourse. The revolution allowed India to become self-reliant in terms of food grains, specifically rice and wheat, and to keep a buffer stock of grains. Additionally, productivity increased, and farmers have been able to receive better prices for their crops because of the Minimum Support Price (MSP) program. Despite these successes, the benefits of the Green Revolution were concentrated in wealthier states such as Punjab, Haryana, and others, leading to disparities between states. Although India has worked toward self-sufficiency in food grain production overall, Kerala has yet to achieve this goal, and current trends indicate that it is regressing on this front.¹⁰⁶ Because of the state's climatic and topographic conditions, Kerala has been known for its horticulture crops, namely

spices and plantation crops, such as rubber, coffee, and tea. Nonetheless, Kerala once met up to 50 percent of the state's rice needs in the 1980s, and this has since declined to about 10 percent today. Furthermore, not only have larger farmers, rather than smallholder farmers, been the primary beneficiaries of the Green Revolution's incentives, but also price support systems, such as MSP, have reportedly covered only a small proportion of a farmer's total production, leaving the sustainability of a farmer's operation at continued risk.¹⁰⁷

In Kerala's recent history, the Land Reforms Act played a significant role in developing and supporting agriculture by giving land to the landless, with a focus on the Scheduled Tribe and Scheduled Caste populations. The policy aimed

to eliminate absentee ownership of property and allowed tenants of large landowners to own the land on which they cultivate. While this policy has facilitated increased participation in agricultural activity and benefited smallholder farmers overall, rapid urbanization in the region has left the policy's legacy in question. Given that the population will likely become mostly urban, new questions arise over land use and tenancy.⁷⁸

The proposed land use in the Thiruvananthapuram Master Plan (draft) for 2031,¹⁰⁴ for example, shows significant transformation of agricultural land to development and residential use zones throughout the district. Implementation of this plan would further reduce opportunities for prospective smallholder farmers and would



Farmers selling directly to residents

severely threaten the livelihoods and well-being of existing farmers. With increased development, smallholder farmers are also forced to encroach on wildlife land, resulting in the destruction of their crops by boars, monkeys, elephants, wolves, and other wildlife that are protected under national policy.¹⁰⁸ ¹⁰⁹ Meanwhile, farmers are left with limited protection and remuneration for damaged crops. One farmer shared that the review and approval process for receiving compensation for damaged crops required five to six years; furthermore, the level of remuneration was far from matching the level of losses incurred.¹¹⁰

Smallholder farmers' challenges related to extreme weather events and affected farming cycles are also closely linked to urbanization trends. Natural systems, such as wetlands, usually act as buffers by preserving water during dry seasons and soaking up excess water to prevent flooding during rainy seasons. Changing land use, such as the development of paddy land, conversion of farm land to quarries, and increased urbanization, are reducing Kerala's ability to manage extreme weather events, including cyclones, droughts, and floods.¹¹¹

Globalization, including increased flow of goods across borders, has also contributed to shifts in market demand and, therefore, the production of key food crops in Kerala, particularly rice paddies. Cash crops are increasingly favored over traditional food crops, leaving smallholder farmers unable to use their own production for

nourishment and, instead, dependent on purchasing food and the state's public distribution system for food grains.¹¹² For this reason, dietary diversity among smallholder farmers is low, with many meals consisting of rice and lentils.^{110, 113, 114} Growing access to high-fat, low-nutrient snack foods and limited consumption of fruits, vegetables, whole grains, lean sources of protein, and low-fat dairy products place many farmers at high risk of nutrient inadequacy and poor health. Diabetes and cardiovascular diseases are reportedly high among smallholder farmers, and the associated medical costs exacerbate already constrained financial situations.^{108, 110, 113, 114-116}

In particular, farmer indebtedness is a critical challenge among small- and medium-sized farmers.¹¹⁷ Of the 102 024 crore INR (about 14.7 billion USD) in debt among small- and medium-sized farmers across all of India, 38 361 million INR (about 5.5 million USD, 18.37 percent) was owed by farmers in Kerala in the 2016–17 fiscal year.⁸⁷

Finally, younger generations' lack of interest in agriculture as a livelihood is a grave concern. While farmers take immense pride in growing food, the economic feasibility of farming is without promise due to limited structural support and public investment. As smaller family sizes become more common, many young individuals are encouraged to pursue employment in the tertiary sector, where earnings are higher and working conditions are more comfortable.¹⁰³

Overall, water and land restrictions due to climate change and urbanization, in conjunction with the effects of globalization, are threatening crop diversity, nutrition security, and environmental sustainability in this region. Although smallholder farmers continue to rise to these challenges to provide food for the region and world, the growers of our food and their well-being are, regrettably, being neglected.

Opportunities for future transformation

Local government planning for food systems could go a long way to improve well-being, including that of smallholder farmers. Lessons from farmers' and food advocates' experiences indicate opportunities for policy to strengthen and transform the local and regional food system in Thiruvananthapuram District by taking the following actions:

Establishing a comprehensive food system model. Sanghamaithry Farmers Producer Co Ltd. Kerala (SFPCK) is a unique farmer-producer cooperative that has made farming more economically feasible for smallholder farmers in Thiruvananthapuram District by connecting many food system sectors from food production to aggregation, processing, wholesale, and retail. The model's success is largely attributed to intentional infrastructures, including a strong business model that eliminates profit from the middle entity in order to benefit farmers, a transportation system consisting of a cold storage truck and several lorries to move produce between headquarters and hubs, value added from processing units and ripening chambers, and marketing through the sale of farm products in retail units.^{99, 100} Thiruvananthapuram District also has the benefit of being a high-density area with a strong customer base within a short distance, which makes markets successful. Finally, the organization has dedicated leadership that greatly values building strong relationships with farmers and farmer members.

While the Thiruvananthapuram Master Plan (draft) has been under discussion and the Integrated District Development Plan (IDDP) for Thiruvananthapuram District is in progress, the time is ripe for local government to consider new strategies to strengthen the local and regional food systems.¹⁰⁴ An all-inclusive model such as SFPCK could advance the system by supporting local food production and by ensuring that farming as a livelihood is economically sustainable for smallholder farmers.

Switching to organic farming as a value-added strategy. The government of Kerala pledged to make the state's food supply 100 percent organic by 2020, due to rising cancer rates and concerns about excess chemicals and pesticides in food. Organic farming relies on ecological processes, biodiversity, and cycles adapted to local conditions that sustain the health of soils, ecosystems, and people.¹¹⁸ As noted earlier, Thanal is supporting smallholder farmers in their transition.^{97, 119} The transition to organic farming, however, can be challenging before farmers are able to reap the benefits.¹²⁰ Organic treatments are still not widely available and are costly, and the withdrawal of external inputs can lead to a steep decline in yield at the beginning of the transition. Even more, other cost effective organic processes have yet to be adopted widely. While few opportunities exist to get organic products on the market, this is gradually changing as the demand for organic crops increases. With this growing interest, local government can



Produce for sale at Sanghamaithry Farmers Producer Co Ltd. Kerala

facilitate farmers' transitions to organic practices by providing easily adoptable and affordable organic practices and treatments, establishing a phased process to transition farmers to organic farming so they do not suffer a dramatic decline in yield, and establishing a transportation system and retail locations where farmers may sell their organic products.

Strengthening homestead farming as bio-intensive, bio-diverse crop production units. Homestead farming has over the years fallen out of the focus of planning and has great potential to be part of a food systems plan of the district, especially because of rapid urbanization, which makes land availability limited. Growing

crops for food, medicine, and fodder, trees for fruit, and raising livestock on the same farm offer the potential for sustainable and productive agroforestry. Homestead farms can also deliver on food and nutrition at the household and local level. The system would also be ecologically integrated and cyclic as far as farm resources are concerned, reducing and utilizing waste in a closed-loop cycle. It is important that land use planners in the district recognize the ecological services and nutritional benefits provided by homestead farms, and incentivize them through public funding, seed sharing cooperatives, peer learning networks, and other mechanisms.

Ensuring smallholder farmer access to land and land ownership. Access to agricultural land and land ownership are growing concerns in Thiruvananthapuram, as more farmland is planned to be converted to housing and other development. Most land holdings in the region and state are too small to be economically viable, forcing smallholder farmers to cultivate on multiple parcels of land to make ends meet. Additionally, most smallholder farmers rent land, often on leases that are too brief, which result in fallow land or contribute to farming practices that may not be environmentally sustainable.¹¹⁴ Farmers who do not own the land also risk losing the land with little or no notice, if the land is sold for development or other purposes.

Ultimately, smallholder farmers have very little protection to ensure financial security and stability. Moreover, many agricultural land



A cow on a homestead farm

owners, who are not dependent on farm income do not cultivate or only minimally maintain the land without adequately putting it to productive use.¹²¹ Local government officials could consider the establishment of schemes that allow extended land rentals, land cooperatives (or, land trusts), and other opportunities for farmers to take ownership of land.

It will also be critical for local governments to be intentional about protecting agricultural land that is already severely limited.

CONTEXT MATTERS

4.2 BUILDING LINKAGES ACROSS THE FOOD SYSTEM IN KHORDHA, ODISHA



Adapted from Map No. 4170 Rev. 18.1
United Nations
February 2020

Odisha

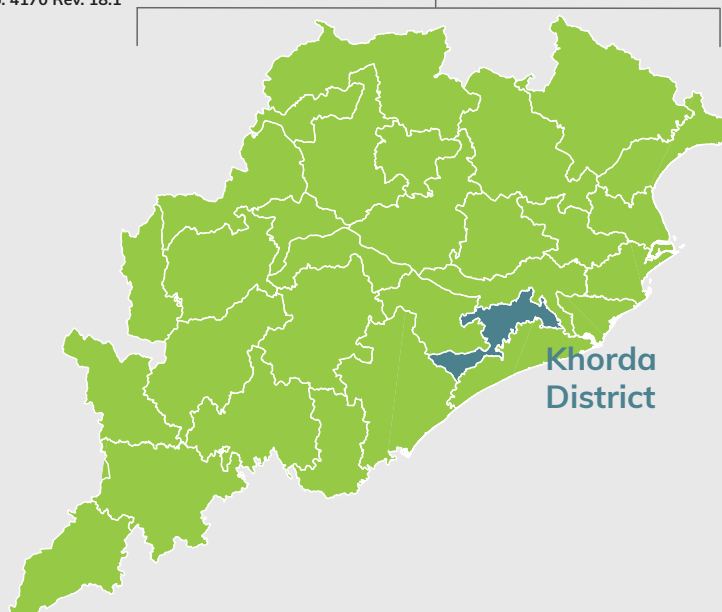


Figure 4.7
Location of Khordha District

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Khordha District is located in the state of Odisha, which lies along the eastern coast of the Indian subcontinent (Figure 4.7). Located in the eastern part of the state, the district is home to the state capital, Bhubaneswar. The state has four major topographical regions: the highland regions of the north and northwest, rolling uplands to the west, the middle mountainous regions and the central plateaus, and coastal plains in the east. Although Khordha lies on the eastern end of the state, it does not touch the coastline.



The 2011 national census reported Khordha's population to be 2 251 673.⁷⁹ Although the district population is a small part of the state population, about 5 percent, Khordha has the highest population density (799 per sq.km) of any district in the state, much higher than the state's overall population density of 269 per sq.km. Khordha is the most urbanized district in the state: 48 percent of its population live in urban areas, and 52 percent live in rural areas.⁷⁹ Overall, only 16 percent of the state's population reside in cities, while 83 percent^{xx} live in rural areas.⁷⁹ The near-even split between urban and rural populations uniquely positions Khordha District as a setting to explore opportunities for strengthening a community food system across its urban, peri-urban, and rural areas.

^{xx} The state also has a large tribal population in the hilly areas, which as of 2011 census represents 22 percent of the statewide population, compared to 8 percent nationally.

Urbanization pressures in the district are evident. The Bhubaneswar Development Plan Area (BDPA), which encompasses the capital and largest city in the state, has increased in geographic area from 25 sq.km to 135 sq.km between 1951 and 2001, a five-fold increase over 50 years.¹²² Recent large-scale infrastructure investments in the capital city fuel ongoing rural to urban migration. The Bhubaneswar city master plan attributes rural-to-urban migration to greater employment opportunities in the city and the agricultural sector's declining economic viability. Planners project that the population density in the BDPA will increase from 13–15 people per 0.004 sq.km (1 acre) in 2010 to 29–30 people per 0.004 sq.km (1 acre) by 2030.¹²³

While the district continues its march toward urbanization, community leaders and organizations in Khordha are simultaneously working to protect and restore indigenous and sustainable food systems (see Living Farms call out box).¹²⁴

Land use

Khordha District covers an area of 2 813 sq.km, which is just 2 percent of Odisha's total land area (Odisha is the 11th largest state in the country by land area, encompassing 155 707 sq.km). Despite being highly urbanized, the district includes both agricultural and non-agricultural land uses (Figure 4.8). As of 2014, about 38 percent of the geographic land area in Khordha was sown for agricultural use, while land for non-agricultural uses was only 16 percent of the district's land area.¹²⁵ The proportion of net land

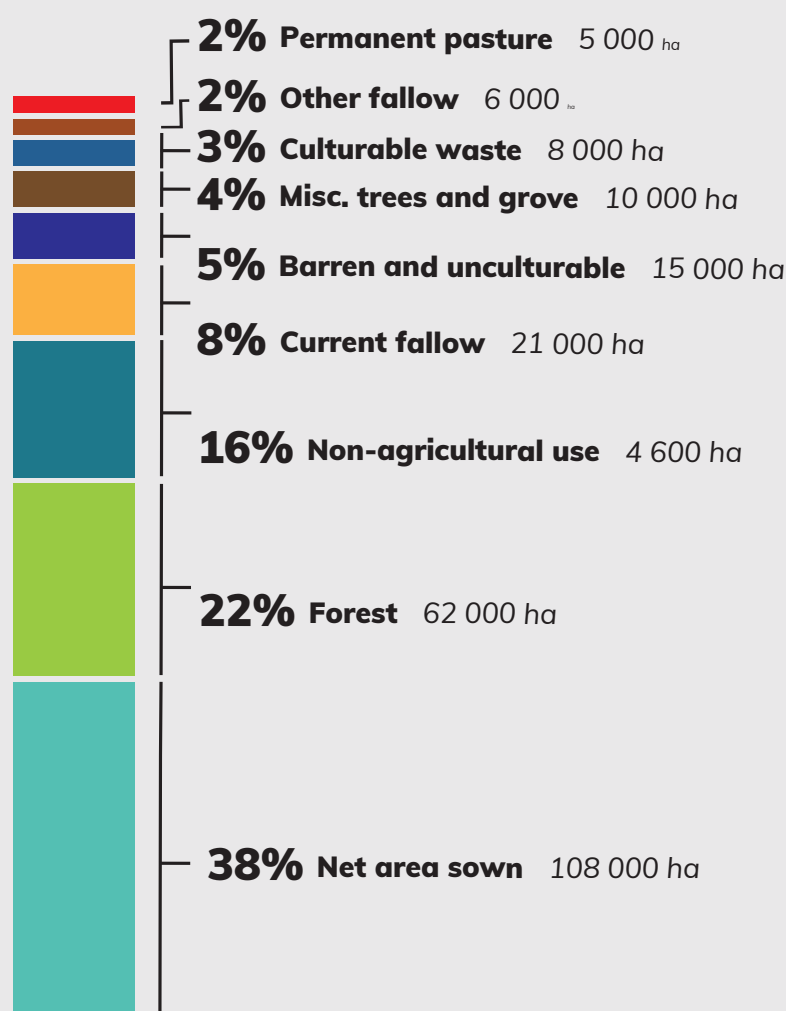
Preserving community-based food systems: Living Farms

Living Farms is a non-profit organization based in Bhubaneswar, Odisha. Founded in 2005, the organization envisions food security and food sovereignty among tribal and forest-dependent communities as well as small, marginal and landless farmers. Living Farms supports farmers to reestablish traditional, regenerative agricultural practices, simultaneously boosting farmer livelihoods and reviving forest ecosystems. The organization provides information about organic practices, supports establishment of self-help groups and seed banks, and helps farmers build upon traditional knowledge to increase their yields and household food security. Living Farms works with community leaders and the public sector to offer knowledge workshops on a range of topics that address health, nutrition and farming practices. Using a community-led approach, Living Farms ties the tenets of sustainable agriculture together with capacity-building efforts that fight hunger, regenerate forests, and work toward food sovereignty by and among its partner communities.



Roadside view of rapid urbanization in the area

Figure 4.8
Land use in Khordha, 2013–14



area sown for agriculture in Khordha District (38 percent) is slightly more than the state net land area sown (35 percent). Forested area represents 22 percent of the geographic land area in the district, which is less than the forested area across the state (37 percent).¹²⁵

Climate

Khordha District, like much of the state, has a tropical monsoon climate. Due to the state's coastal location along the Bay of Bengal, and the higher elevations toward the south, the state has three distinct annual seasons: winter, summer, and rainy. High temperatures and humidity, significant rainfall, and mild winters are common. The state is divided into four climatic zones: the Northern Plateau, the Eastern Ghat Zone, the Central Table Land, and the Coastal Plain Zone (where Khordha District is located).¹²⁶ The variation in seasons, temperatures, and elevation allows for greater diversity in agricultural crops.

Rainfall has been unpredictable in recent years, with adverse effects on agriculture in Khordha District. Only 54 percent of the cultivated land in Odisha is irrigated, which leaves almost half of cultivated lands dependent on rain patterns.¹²⁵ In 2013, the district's rainfall was 1 872 millimeters, 33 percent higher than the average, with most of the rain falling during the harvest season in October. The state^{xxi} frequently experiences extreme weather events such as cyclones, droughts, and flash floods, which substantially affect agricultural productivity and

contribute to crop loss.¹²⁶ According to a 2015 report, over 1 300 villages recorded 50 percent or greater crop loss for the summer season in Khordha District, compared to the 2013 average of 1 072 villages per district (among the 18 districts with crop loss data).¹²⁵

Literacy and socioeconomic conditions

As of 2011, the literacy rate in Khordha District was about 87 percent, higher than the statewide rate of 72 percent. However, the rates are lower for vulnerable groups such as Scheduled Tribes and Castes, and for those in rural areas at both the district and state levels.¹²⁷ Low levels of literacy constrain economic opportunities for residents, and may be associated with higher poverty rates.

The poverty rate is difficult to measure at the district level in India, depending on the state and availability of data. One proxy

measure is the eligibility and use of ration cards at the household level.^{xxii} Among all ration cards distributed in Khordha District as of March 2011, 30 percent of ration cards were distributed to households with a below-poverty-line (BPL) designation.¹²⁸ One 2011–2012 study estimates that 14 percent of rural households in Khordha live below the poverty line, compared to 35 percent of rural households statewide.¹²⁹ The Odisha statewide poverty headcount ratio^{xxiii} declined significantly between 2005 and 2012. Between 2004–2005, 57 percent of the population was living in poverty, whereas between 2011–2012 only 32 percent was living in poverty.¹²⁶

As of the 2011 census, Khordha District was home to 792 193 main and marginal workers and 1 459 480 non-working persons.

^{xxiv} In Khordha District, 12 percent of the population was seeking or available^{xxv} for work.^{79, 86, 130, 131}

Unemployment in Odisha was higher than the national average of 5 percent but varies across geographies; in

rural areas of Odisha, 8.7 percent of the population was unemployed, while 5.8 percent of the urban population was unemployed.¹²⁶

^{xxi} Normal rainfall in the state is 1 451 millimeters per year, which is concentrated from June to September.

^{xxii} A ration card allows households to access the public distribution system (PDS) for food. Ration cards are distributed according to income levels. A below-poverty-level (BPL) card is issued to families that are below the poverty line (based on India's poverty estimates for 2011–12 derived from monthly per capita consumer expenditure of 695 INR (approx. 10 USD based on December 2019 conversion rates) and 861 INR (approx. 12 USD based on December 2019 conversion rates) for rural and urban Odisha, respectively). This system has changed since the National Food Security Act of 2013 was passed.

^{xxiii} The poverty head count ratio is the proportion of the population that is poor compared to the total population. An individual person is defined as "poor" if their monthly expenditures fall below the poverty line of 695 INR (rural) and 861 INR (urban) for 2011–2012. Monthly expenditure data between 2004–2011 were collected by the National Sample Survey, and the methodology to measure the poverty headcount ratio was developed by the Tendulkar Committee, appointed by the Planning Commission of India.

^{xxiv} The Census of India classifies the total population of a given geography into three main categories: main workers, marginal workers, and non-workers. According to census metadata, "work" is defined as "participation in any economically productive activity with or without compensation, wages or profit," and "workers" are defined as: "all persons (irrespective of age and sex) who participate in any productive activity for any length of time during the reference period." Main workers are those who were engaged in any economically productive activity for six months or more during the year. Marginal workers are those who worked for fewer than six months during the year. Non-workers (non-working persons) are those who did not work any time at all in the year preceding the date of enumeration. Non-workers include students, persons engaged in household duties, dependents (babies and children, disabled persons), pensioners, and beggars.

^{xxv} For the classifications of marginal workers and non-workers, the Census of India distinguishes those who are included in the official definition (above) and those who are "seeking or available for work," to divide the population who could potentially be working (i.e., unemployed but able to work) from those who are unable to or exempt from work (e.g., babies, disabled persons, retirees/pensioners).



Irrigation canal used as farmers' main water source

Between 2012–2013, agricultural households^{xxvi} in Odisha earned an average of 4 976 INR (70.79 USD) from all income sources per month, 54 percent of which comes from agricultural activities (the remainder comes from non-farm business or wages/salaries). Agricultural households in Odisha earned less per month compared to average earnings among agricultural households at the national level (6 246 INR or 88.86 USD) during the same period.⁸⁹ Of farmers' average monthly household income, 35 percent came from cultivation directly, but 34 percent was earned from wages and 16 percent from non-farm business, demonstrating that statewide, farmers may need to seek supplementary income sources beyond agricultural production.⁸⁹ Rural households in the state engaged in self-employed agriculture have lower average expenditures per month (892 INR or 12.56 USD) than do those earning salaries/regular wages (1 442 INR or 20.52 USD).¹³² Desire to increase their spending power may incentivize rural self-employed agricultural households to seek alternative, salaried work, which may drive their migration to urban areas.

Public health

Reports suggest that hunger and diet-related diseases may pose a concern for the district. As of 2011, Khordha District has the second highest rate of individuals diagnosed with diabetes (1 410 per 100 000 persons) among all districts in the state. Rates of diabetes are higher in the district's urban than in rural areas.¹³³ It

is possible that the shift in food environments may accelerate the prevalence of chronic disease in urban areas. Conversely, the infant mortality rate (IMR) in Khordha District (72 per 1 000 live births overall) is higher in rural areas (79 per 1 000) than in urban areas (64 per 1 000) and is much higher than the state averages in both rural (62) and urban (41) areas.¹³³ Odisha had a hunger index score^{xxvii} of 23.7 in 2008, worse than both the national score of 23 and Kerala's score of 17.6 (see the Trivananthapuram case study).⁹⁰ Various reports indicate that rural regions of Odisha have poor physical and economic access to health services, which may exacerbate health problems.^{127, 133}

Local Government Structure

Khordha District is one of 30 administrative divisions (districts) in the state of Odisha. The National Constitution enables the local government structure, as described in the earlier case study on Thiruvananthapuram. Khordha District was formed on April 1, 1993, through separation from another district (Puri District) in the state. Khordha District comprises three tehsils: Bhubaneswar, Jatani, and Khurda, all of which are governed by separate municipal corporations/councils. The tehsils are further subdivided into ten community development blocks, which contain panchayats and villages governed by their own local elected representatives. As of this writing, there were 190 Gram Panchayats and 1 546 villages in the district.^{126, 134}

Economy

^{xxvi} The National Sample Survey (2013) defined "agricultural households" as households receiving some value of more than 3 000 INR from agricultural production (field crops, horticulture, floriculture, plantation crops, animal husbandry, vermiculture, sericulture, fodder crops, bee-keeping, etc.) on an "agricultural production unit," or land that may or may not be owned by the household. The household must also have at least one member who is self-employed in agriculture, with either principal or subsidiary status during the previous year. The survey was conducted only in rural areas. Households consisting entirely of agricultural laborers (i.e., without any person being self-employed in agriculture) or engaged in coastal fishing, artisanal production, or agricultural services were not included in the survey.

^{xxvii} The Hunger Index was developed and published by the International Food Policy Research Institute (IFPRI) in 2008, using data from 2004–2008. The India State Hunger Index is based on the estimated proportion of the population that does not consume enough calories, the proportion of underweight children under five years old, and the mortality rate among children under five years old.

As an urban hub, the district plays a key role in the state's economy. The district has a diverse economic base that relies in part on the city regional food system. Contribution of each sector to the district's economy, relative to the state, is illustrated in Table 4.5 based on 2011-2012 data. As of 2010–2011, the Gross District Domestic Product (GDDP) of Khordha District was 94 billion INR (1.34 billion USD) and contributed 7.52 percent to the state's overall Gross State Domestic Product (GSDP), the second highest contribution among the state's 30 districts (at constant 2004–2005 prices).¹²⁶

Sectors that directly involve food production account for about 6 percent of this urban district's economy (agriculture and animal husbandry 5.17 percent, and fishing 0.85 percent). These sectors are, of course, not the only sectors that involve the food system. Manufacturing – which includes food processing – contributes about 10 percent. The sector of trade, hotels and restaurants – which would capture food retail and food service – represents 20 percent of the economy, and is also the most significant contributor to the economy.¹³⁵ Importantly, the district appears to specialize in this sector compared to the state (location quotient of 1.49). Transportation through rail and other means – which could include transportation of food from food source to food customer – represents about 10 percent of the economy as well (Table 4.5).

Tighter linkages among the food-

related sectors within the district and state can yield higher economic return. One positive move in this direction is the state's 2013 Food Processing Policy that calls for in-state processing of 25 percent of Odisha farmers' own product by 2025.^{xxviii} The policy aims to create job opportunities for those engaged in agricultural production and increase farmers' through added-value activities such as implementing public fiscal incentives, investing in skills training, and creating supportive infrastructure along the supply chain such as cold storage warehouses.¹³⁶ As of 2013–2014, the city of Bhubaneswar represents just four percent of statewide employment in the food processing industry among micro, small-, and medium-sized enterprises (MSMEs).

Yet, the city boasts the greatest percentage of statewide investment (10.4 percent) in food processing MSMEs, compared to the 29 other districts (excluding Khordha District, where Bhubaneswar is located).¹²⁵ According to a 2015 profile of all MSME industry types in Khordha District, 24 percent of investment in micro and small enterprises in the district is allocated for agro-based, soda, and water packaging industries. Of the 76 potential MSME industry types the district identified in 2015, almost 40 percent are specifically for agricultural products and for food or beverage processing, packaging, and services. Yet, only ten percent

^{xxviii} The MSME Department is the nodal agency for the Odisha Food Processing Policy. The policy is in line with the National Food Processing Policy with the same 2025 goal.



Farmers with capital can invest in agricultural technology such as rice threshers as pictured here

of employment from MSMEs comes from agro- or drink-based industries in the district,¹³⁷ which may suggest that the processing sector is ripe for innovation and increased employment opportunities.¹²⁷

Khordha District connects Odisha to the rest of the country (and the world) through transit networks that include interstate highways, railways, and airlines. Biju Patnaik International Airport and the Bhubaneswar Railway station, the

headquarters of the East Coast Railway zone of Indian Railways, are also located in Bhubaneswar. The national highway that links the metro cities of Chennai and Kolkata runs through the district and capital city, as do five other national highways. Proximity to the Bay of Bengal and many major rivers also makes the region suitable for maritime trade activities and endows it with the water resources for major manufacturing.¹²⁷

Overall, if one takes into account all the entrepreneurial activities that span food production (agriculture, fishing), food processing/manufacturing, food retail and food distribution, the food system can continue to be a major lever in the district's economy.

Table 4.5 Contribution of food-related economic sectors to Khordha's gross district domestic product, 2011-2012

Sector	Khordha (district)		Odisha (state)		Location Quotients
	INR (in lakhs)	Percentage	INR (in lakhs)	Percentage	
Trade, Hotel & Restaurant	204 755	20.71	1 804 431	13.87	1.49
Banking & Insurance	143 854	14.55	782 160	6.01	2.42
Manufacturing Regd.	98 331	9.94	1 533 769	11.79	0.84
Public Administration	86 829	8.78	475 819	3.66	2.40
Other Services	85 298	8.63	1 248 186	9.59	0.90
Transport by Other means	67 099	6.79	844 047	6.49	1.05
Real Estate, Ownership of Dwellings & Business services	66 832	6.76	752 268	5.78	1.17
Construction	57 648	5.83	1 447 872	11.13	0.52
Agriculture and Animal Husbandry	51 156	5.17	1 819 897	13.99	0.37
Electricity, Gas & Water supply	38 204	3.86	340 758	2.62	1.48
Communication	33 009	3.34	248 936	1.91	1.74
Railway	31 872	3.22	150 717	1.16	2.78
Fishery	8 423	0.85	141 145	1.08	0.79
Manufacturing Un-Regd.	7 145	0.72	284 407	2.19	0.33
Forestry	6 880	0.70	276 792	2.13	0.33
Storage	1 237	0.13	15 324	0.12	1.06
Mining & Quarrying	255	0.03	844,773	6.49	0.00
Total GDDP	988 828	100.00	13 011 301	100.00	

Agriculture

Agriculture remains important in Khordha, much like the rest of the state. Although agriculture's contribution to gross domestic product is approximately 6 percent in Khordha District, the sector remains an important source of income and employment. The 2011 census reports that among workers engaged in agriculture or allied services in Khordha District, 44 percent are cultivators (those who own the land they farm), and 56 percent are agricultural laborers (those who work on others' land for wages). Of both cultivators and agricultural laborers in Khordha District, 86 percent are male and 16 percent female. In the district,

women are more likely to be agricultural laborers (22 percent of all laborers) than cultivators (just seven percent of all cultivators). Cultivators and agricultural laborers comprise 26 percent of the district's total working population, compared to 61 percent at the state level.⁷⁹ Although still significant, the role of agriculture in state employment has decreased over time: in 1981, 74 percent of the state's population was employed in agriculture, but by 2011 employment in agriculture had dropped to 61 percent.¹²⁶

Khordha District, which falls in the east and southeast coastal zones, is ideal for growing various vegetables. Khordha also has the second highest number of inland fishers in all

districts of Odisha.¹²⁶ In Khordha District, paddy (rice) comprises the majority (48.4 percent) of the net cropped area sown for agriculture, followed by pulses (27.8 percent), other vegetables (10.8 percent), fruits (9.5 percent), and oil seeds (2.7 percent) (Table 4.6).¹²⁵

Most landholders own or lease small plots of land in Khordha District. Small (1-2 hectares) and marginal landholdings (less than 1 hectare) together make up the vast majority (14.5 percent and 81 percent, respectively) of farming operations in the district. Due in part to rapid urbanization in Khordha, operational holdings of land for agriculture have decreased in recent years. Between 2001 and 2011, the number of small



Evidence of urbanization can be seen as buildings start to surround one respondent's farmland

Table 4.6 Agricultural crops in Khordha District, 2013-2014¹²⁵

Crop	Khordha District			
	Cropped Area			
	Area (Ha)	Percentage (%)	Yield Rate (kg/ha)	Production (MT)
Paddy (rice)	98 350	47.43	811	79 750
Pulses	57 580	27.77	475	27 360
Vegetables	22 420	10.81	14 942	335 000
Fruits	19 740	9.52	data not available	data not available
Oil seeds	5 690	2.74	1 216	6 920
Spices	1 590	0.77	2 252	3 580
Sugarcane	980	0.47	66 750	65 420
Other cereals	890	0.43	12	16 220
Fibres	120	0.06	870	580
Total Area	207 360	100.00		

and semi-medium (2-4 hectares) holdings decreased by 30 and 51 percent, respectively. The number of marginal holdings increased during the same period, however (by 20 percent), demonstrating that farm sizes are shrinking quickly, perhaps due to growth of the urban area.¹³⁸ Most farmers own and operate their holdings (72.86 percent), while 22.47 percent have lease agreements with limited or no ownership rights.¹³⁸ Smallholder farmers contribute significantly to the food produced in Khordha District. Small and marginal landholders produce food crops on 78 percent of the total land area sown for food (in hectares) in the district. At the state level, small and marginal farms operate on 72 percent of the total area sown for food.¹³⁸

Existing policy initiatives

Districts in the state of Odisha are governed by state-level policies, many of which translate central government laws or schemes into local government implementation strategies. For example, policy safeguards have been put in place to provide fair compensation in the land acquisition process: the Odisha 2013 Right to Fair Compensation and Transparency in Land Acquisition, Resettlement and Rehabilitation Act set goals to make land acquisition processes more equitable, including protection of multi-cropped, irrigated land during acquisition periods.¹³⁹ Although the protection of irrigated



Farmer standing beside cauliflower patch

land seeks to safeguard food security for area residents, challenges may exist in the implementation and applicability of the act's acquisition requirements in Khordha District; 53 percent of the gross cropped area is not irrigated in the district, and therefore would not be protected.¹²⁵

The Odisha Land Reform Act of 1960 required prospective land developers to gain written permission from the government prior to converting agricultural to non-agricultural land in urban areas, and pay a fee to convert the land. Yet, state government passed an

amendment in 2015 to the Odisha Development Authorities Act of 1982 that removed the requirement to seek written permission and, instead, requires land developers to pay a land conversion fee into a state development plan fund.¹⁴⁰ This change may affect the rate of agricultural land conversion in the district. When policy changes involve multiple departments and separate legal statutes, land conversion practices may be interpreted and implemented differently across departments at the district (or other) levels of government. Overall, without clear motivations, shared

goals (across public agencies), and well-managed implementation procedures, land conversion policies may have unintended consequences.

Various central and/or state-level policies specifically target the food system and smallholders in particular, although the local implementation process is somewhat unclear. For example, a Government of India scheme to create direct-to-consumer produce outlets linking smallholders with larger markets was implemented in 2011-2012 in Khordha District. The program opened retail outlets to

sell farm products directly to urban residents in Bhubaneswar. While the program leveraged external support through a private-public partnership with the Government of Odisha Directorate of Horticulture and a private food retail company, the program was not initiated by district or city government action and yet required some implementation from district and block-level staff.¹⁴¹ Although initial outcomes reported significant income gains for farmers and increased vegetable purchasing among residents of Bhubaneswar, 10 out of 14 of the retail outlets had closed by 2018.¹⁴¹

While most food policies in Odisha focus on state-level systems, a handful of innovative strategies are unfolding at the district level as well.

In 2009, the Bhubaneswar Municipal Corporation, the local government entity that governs the City of Bhubaneswar in Khordha District, adopted a policy to organize street vendors into individual shops within designated vending zones. The policy objective was to improve informal trade practices and management of public space in the city.¹⁴² Some suggest that a high-density street-vendor presence may impede pedestrian movement and vehicular traffic, which may result in increased crime, reduced security, and compromised aesthetics.¹⁴³ In spite of these purported negative side effects, street vending is crucial to cities and regions.¹⁴⁴ Street vendors purchase product directly from smallholder farmers and sell it at affordable rates to consumers.

Street vendors fill gaps within more formal food system sectors, and generate demand for ancillary public and private businesses, such as transportation providers.¹⁴⁵ In 2009, construction for some vending zones in Bhubaneswar was financed by an advertising company in exchange for advertising rights above the shops. The funding, however, did not fully cover the total cost of the shops in the zones, which forced vendors to cover some of the costs.¹⁴⁶ Despite the initial support for informal retail through the designated vending zones at the municipal and central levels, challenges remain.

In early 2018, the Bhubaneswar Municipal Corporation launched another formalization effort, following the precedent of nearby states, to support street vendors by spearheading the process of identifying and relocating the vendors to designated indoor structures.^{147, 148} The execution of the policy raises questions of equity in planning, since the planned market complex would accommodate only a small number (2 000) of the 22 000 vendors in Bhubaneswar.¹⁴⁹ The limited-capacity municipal vending zones may bring increased social and financial security only to some vendors.¹⁵⁰

Nationally, the Street Vendors (Protection of Livelihood and Regulation of Street Vending) Bill, which legalized street vending across India in 2014, affirms support for vending in each municipal body to better identify and accommodate vendors in designated vending

zones.¹⁵¹ However, excessive formalization of street vending may exacerbate barriers or generate new barriers to entry for vendors, such as the cost of licenses, permits, and shop construction. Efforts to engage street vendors as equal partners in strengthening the broader food system and urban economy are necessary; efforts to offer broader support structures beyond formal vending spaces for street vendors must continue, or in some cases, begin.¹⁵² India's Ministry of Urban Development acknowledges the importance of vending for many residents who are "often those who are unable to get regular jobs in the formal sector. They try to solve their livelihood issues through their own meager financial resources and sweat equity."¹⁵² Currently, there are no schemes targeted toward the financial security of street vendors in Bhubaneswar, such as low-interest loan agreements. Increased top-down formalization of market activities and entrepreneurship may have unintended negative consequences on the street vendors themselves and on the broader food system, without addressing underlying economic challenges that exist.

Comprehensive Development Plan of Bhubaneswar (2010). Odisha is governed by two Acts that divide planning zones into urban areas and the rest of the state. Providing guidance for city-level planning, the Orissa Development Authority Act of 1982 requires the nine development authorities in major urban areas to create city development plans that include zonal development,



Farmers and farm workers use agricultural technology to reduce physical labor

special area development, and subdivision plans. The Bhubaneswar Development Authority (BDA) is responsible for the urban areas in Khordha District.

To address planning needs beyond urban areas of the state, the Odisha Town Planning and Improvement Trust Act of 1956 (amended in 1975) requires master plans be created for all areas and towns outside urban areas and includes provisions for land suitability and use analyses as well as development schemes. The act provides for seven regional improvement trusts to govern and plan for clusters of towns within a single district. Areas outside of urban clusters are part of 54 special

planning authorities comprised of rural areas and very small towns. Although these planning entities cover most of the state, Odisha does not currently require district-level land use plans, and while city land development plans cover the designated development authority area, they do not extend to entire districts.¹⁵³

A lack of land use planning beyond politically determined boundaries may worsen issues that smallholder farmers already face due to urbanization, such as soil degradation and pressure from real-estate development. In some cases, multiple municipal corporations and governing bodies within a single district may choose to develop master plans together, which provide greater

cohesion from a regional perspective, beyond the single city development plans.

For example, the Bhubaneswar Development Authority (BDA) contracted consultants from a local university planning department to formulate a comprehensive development plan for the region that includes the City of Bhubaneswar, the Bhubaneswar Development Plan Area (BDPA)-Rural, and the municipalities of Jatani and Khordha. The planning process spanned four years from 2005 to 2009, and the plan was finalized in 2010. The comprehensive development plan (CDP), called Vision 2030, is part of an effort to move toward more balanced development that will improve quality of life and the region's desirability.¹²³

The plan covers various government divisions, from rural agricultural towns to the city center, to address the mixed land uses that arose from a previous lack of zoning regulations. The population density of the CDP planning area^{xxix} is projected to grow from 2 046 (persons per sq.km) in 2011 to 7 158 in 2030. Planners recognize the consequences of unmitigated growth on the region's natural resources and assets and outline four land-type divisions that will limit development based on ecological sensitivity. Yet, with the increase in demand for jobs, housing,

^{xxix}The CDP planning area includes the City of Bhubaneswar, the Bhubaneswar Development Plan Area (BDPA)-Rural, and the municipalities of Jatani and Khordha.

and infrastructure, the CDP proposes a shift from an agrarian economy to a high-tech service economy and a decrease in current land for agriculture from 30 percent to 14 percent.

The CDP includes plans for an “increased number of housing units” to accommodate new city dwellers. Real estate development often places pressure on peri-urban farmers, who may choose to sell the land during times of higher value due to demand for housing, thus accelerating the reduction of farmland in the region.

Despite envisioning a decrease in land for agriculture to accommodate growth, the CDP does promote food processing and high-yield produce production. The plan notes that “the share of land dedicated to agriculture will reduce drastically in the coming years. Moreover, the residual land left for primary sector activities will be more organized and oriented towards high yield produce” (p.46).^{123, 154}

If the city develops in this fashion, it will become necessary to strengthen Khordha District’s linkages to the

regional food system in order to ensure residents have access to culturally preferred, affordable food.

The CDP also calls for improved transportation networks: “Lack of connectivity between some parts of the BDPA with the Bhubaneswar town has posed constraints to growth. The proposed road structure with hierarchy of roads has aimed at providing connectivity to the existing as well as the future growth nodes” (p. xxxiv, CDP).¹²³ Greater attention to transportation infrastructure may facilitate easier access to markets



Dhauri self help group members walking towards communal farmland plot

for farmers and processors. Overall, the plan supports urbanization with limited attention to strengthening or leveraging the food system as a key element of the city-region.

Challenges and lessons

A primarily rural state, and rich in high-demand natural resources such as bauxite and iron ore, Odisha has become the focus of debate over land rights. The state's history reflects a series of challenges over the land rights of private landowners, tribal communities, corporations, and the government. Policies implemented during British rule removed small-scale farmers' rights to their land, especially those in tribal areas, in favor of state control.¹⁵⁵ Post-independence policies continued land alienation in many parts of the state, as the new government chose not to recognize occupancy as ownership over the land.¹⁵⁶ To leverage global demand for natural resources, including minerals, timber, and agriculture for economic development, Odisha has adjusted state policy to support outside investment.

Conversion of land from agricultural to non-agricultural uses in favor of industry is a major challenge in Odisha, especially due to the state economy's reliance on agriculture, particularly for employment. Although agricultural production remains a significant contributor to the state GDP, agricultural land has been disappearing steadily since 1960. State-level policy actions in the last five years have sought to make land acquisition processes more equitable and to allow more

people to gain access to farmland, yet they also have loosened requirements for developers who wish to convert farmland for non-agricultural use. State regulations that seek to simultaneously protect and allow conversion of agricultural lands may cause confusion among local implementing bodies and the residents they seek to benefit, and may favor individuals or entities with greater access to social or financial capital.

In Khordha District, farmers and planners recognize the pressure of rapid urban development on land for farming. Although the CDP^{xxx} for the Bhubaneswar Development Plan Area claims to prioritize protection of land for agriculture and other ecologically sensitive areas, land allocated for agriculture in the plan's coverage area will be reduced from 30 percent (existing as of 2008) to 13 percent (proposed by 2030).¹⁵⁴

During interviews with the authors, farmers reported that selling land for development is attractive to help them cover unforeseen expenses, particularly in lieu of savings accounts, or to reduce farm size due to lack of labor.^{157, 158} In addition, farmers are unsure about the future of their farming in general. Although farmers maintain that they are dedicated to farming, they doubt that their own children or other young people will choose to farm, describing the young people's higher levels of education as an escape from farm livelihoods.¹⁵⁸⁻¹⁶² Some farming households, particularly those in Khordha District, have noticed a shift in the dietary preferences of



Farm workers and cattle in Odisha

their children, who prefer snacks and packaged foods purchased outside the home to the food grown and prepared at home.^{158, 162, 163} As the district continues to urbanize, residents may have greater access to prepared and packaged food that in turn negatively impacts public health. Khordha's second highest rate of diabetes among other districts in Odisha may be linked in part to shift in diets due to the availability of certain types of food.

Economic growth in the service and industry sectors in the urbanizing areas of Khordha has led to significant challenges for the agricultural labor force. Laborers choose daily wage work in the city

^{xxx} The CDP's proposed land use for agriculture in the Bhubaneswar Development Plan Area includes the total aggregated land for agricultural and forest use. The previous data from 2008 separated agricultural from vegetation and forest land use. Therefore, an exact comparison between existing and proposed use for agricultural land alone for the BPDA cannot be computed.

rather than working on farms, leaving farmers struggling to complete time-sensitive work such as planting and harvesting. Some farmers compensate for the deficit by hiring labor from rural parts of the district or other parts of the state, or by purchasing tractors to expedite the work.^{157, 162} Cultivators and agricultural laborers represent just one quarter of the workforce in Khordha District, demonstrating the movement away from agriculture as preferred, or viable, employment. In part due to the lack of available labor, some farmers rely on tractor ownership or rental to complete more work in less time, increasing their production and profit. Farmers reported that tractor use composes a significant portion of agriculture-related costs and debt.^{157, 158, 161, 162} Farmers also recorded lost and damaged crops in recent years due to heavy and late rains as well as cyclones. The weather events forced them to adapt through crop loan acquisition, increased fertilizer use, shift to high-value crops, and sale of land.^{157, 158, 160-162, 164} Farmers noted some negative impacts of chemical use and polluted water, such as death of fish and small creatures and declining soil fertility.^{158, 160, 162}

A level of informality exists in the sectors engaging in marketing, storage, transportation, and sale of crops in Khordha District. Farmers often prefer not to sell to government outlets, due to the frequent delays or mistakes in payment checks.^{158, 164} The Minimum Support Price (MSP)^{xxx1} set by the central government is often not sufficient to cover farm expenses.¹⁶³ Therefore, farmers

shift between public and private market outlets, depending on market versus MSP prices and the buyer's transportation requirements. The lack of consistency in sales to both public and private buyers may place additional burdens of stress and time loss on smallholders. Although farmers did not report high financial stress, they may experience the full impact of debt repayments or market fluctuation when other significant life events occur. The expenses of marriage, healthcare, and education concerned farmers in the district, particularly in light of the persistent inability to save.^{157, 158, 160-162, 164-167}

Lack of institutional support is an additional challenge for farmers. Although farmers are satisfied with interactions with extension agents, they do not interact with other government agencies and hesitate to trust government payments and schemes.^{157, 158, 160-162, 164-168} Farmers participate in cooperative societies to purchase seeds and fertilizer at subsidized rates and receive small loans, but the involvement of cooperatives may not go beyond distribution of resources.^{157, 158, 162, 164, 166, 167} Unlike other regions of the state with strong advocacy movements, most farmers in Khordha District reported limited support from farmer-member organizations or NGOs, other than the centrally-funded Women's Self-Help Groups^{xxx2} (WSHG).¹⁶⁹ A few female farmers participating in one WSHG did report benefits due to their participation in the group's communal agricultural production and food processing facility, primarily earning supplemental or separate from the other workers in their homes.¹⁶⁷

Although Bhubaneswar is home to the headquarters of multiple civil society organizations^{xxx3} that work on issues affecting smallholders, there is little focus on farmers living in Khordha District.

Farmers in Khordha District face challenges due to forces of globalization, urbanization, extreme weather, and top-down policy-making. The unpredictability of those forces and lack of institutional support through food-focused policy and planning create challenges such as limited land access, reduced labor availability, and inconsistent markets and pricing among others. These challenges may further discourage younger generations from farming and create additional pressure on urban areas, as former agricultural households migrate in search of lower-risk employment. During interviews, although farmers acknowledged the importance of farming for regional food security and community well-being, they did not identify policymaking as an effective strategy to address the challenges they face.

^{xxx1} The Minimum Support Price (MSP) is part of the Price Support Scheme of the Government of India. The MSP is the guaranteed price that central (national) agencies must pay to procure commodity crops from farmers for each crop year (season). The goal of the MSP is to provide an assured market for farmers, and stable prices for consumers.

^{xxx2} The scheme, managed by the National Bank for Agriculture and Rural Development, provides funds to regional banks that finance the formation of self-organized, income-generating, membership groups.

^{xxx3} Including Living Farms, AGRAGAMEE, and Chetna Organic, which have a significant presence in other districts in Odisha.

Opportunities for transformation

Recognizing and amplifying existing successes. Bhubaneshwar is home to community organizations – such as Living Farms – that are already engaged in strengthening indigenous and sustainable food systems within Odisha (though with limited reach within Khordha). Local government recognition and support for such community organizations is crucial to developing Khordha District's food system. Indeed, local government food systems plans and policies

should be based on the experiences of these local organizations who have a rich history of strengthening local food systems.

Living Farms has supported farmers of scheduled tribes in one district in southern Odisha to leverage the presence of a local economic driver (a hospital) as a hub for selling and marketing their organic farm products. The hospital-based farmers market shortens the supply chain and allows consumers to engage directly with producers, increasing consumer awareness about farming and

environmental practices the tribal farmers use, and leading to greater economic sustainability among the farming households. Farmers and hospital representatives work together to establish rates and rules of the market.¹⁷⁰ Due to its existing relationships with the hospital and tribal farming communities, Living Farms brokered the connections needed to launch the market. If engaged in local planning efforts, organizations such as Living Farms can facilitate public-private linkages across existing assets within city or regional food systems.



Farmer walks along sharecropped farmland

Preserving farmland for the future. Without planning and policy interventions that protect agricultural land and incentivize agriculture and agro-based industry, farmland and farming livelihoods could continue to decline in the district. Increased access to farmland for existing or potential farmers may provide greater stability in farming. While most landholdings smaller than two hectares are both owned and operated by the owner, many farmers lease additional land for production.¹²⁵ As lease-holders, cultivators or laborers have access to insurance, crop loans, or other types of credit.

Currently, only raiyats^{xxxiv} and people with economic stress (minors, widows, people with disabilities, and those in the armed forces) may lease agricultural land.¹⁷¹ Policies that support the formation of secure lease agreements or land titles for any sharecroppers, and that create disincentives to convert agricultural land may prevent further farmland loss in the district; in turn, these policies may increase the economic viability of farming.

Growing value-added agricultural sectors. Given the connectivity through transportation hubs to agricultural districts and the existing investment in micro, small- and medium-sized enterprises (MSMEs)

^{xxxiv} Someone with the right to hold land for cultivation, whether by themselves, with members of their family, or through hired labor. This may also be called a person with succession rights.

in Khordha District, there may be opportunities to create additional food aggregation and processing entities around or near the state's capital. Significant investment has been made in agriculture and food-related industries in Khordha and Bhubaneswar, but employment in the industries themselves remains low.

Based on the agricultural production across the state and the Khordha District population's growing interest in alternative employment, the district may be well suited to increase non-farm but agriculture-related job opportunities. Residents and migrants in search of agro-systems-related work may receive training and education through resources in Bhubaneswar such as the Orissa University of Agriculture and Technology and the Odisha Skill Development Authority.¹²⁷ The BDPA comprehensive development plan (CDP) indicates a preference for agro- and food processing and retail and high-value agricultural production to move toward the Vision 2030, with a specific focus on processing foods grown in the area for local consumption. The CDP reports that the local economy of BDPA is transitioning from an agrarian and traditional industry-oriented economy to a high-tech service economy:

“The relative share of primary sector activities to the local economy in terms of employment and income is expected to come down with greater dependence

on secondary and tertiary sector activities. Large-scale conversion of land and change in work force absorption in high-wage non-primary activities will be the key reason for this structural transformation. Among primary sector activities, there will be larger stress on high value farming, horticulture, floriculture, animal husbandry and livestock farming. Several food processing activities can also flourish based on these activities to meet the local consumption demand.”¹⁵⁴

By preserving land and implementing incentives, (for example, accelerated approval processes, self-certification, and ancillary industry support such as improved transportation systems), the district may boost local investment and employment opportunities while strengthening the food system value chain.

Most of the industrial areas in the proposed land use plan for the BDPA are located along major transportation routes, including the highway, rail network, and rivers. Some industrial zones are spatially aligned with agricultural use areas, which may be key sites for food processing to further curb transportation challenges by directly linking product to processors.¹⁷² Demand from additional processing facilities for raw products (from smallholders within and outside the district) will also move the state toward its goal to process 25 percent of its own produce in the state by

2025, in hopes of increasing food security and the economic viability of farming statewide.^{136, 173}

Increasing advocacy and support for smallholder farmers. Although Bhubaneswar is home to multiple civil service organizations working on smallholder support, many focus their efforts outside the district. Moreover, although farmers indicate engagement with agricultural extension agents, smallholder farmers may benefit from stronger engagement with the civic sector. Furthermore, most efforts and programs promoting agro-type MSMEs are implemented by state or local government staff, which may limit agro-entrepreneurs' input and autonomy in decision-making. The establishment of a farmer-centered and farmer-led entity could encourage infrastructural improvements, price stabilization, access to credit, and timely government payments; it could also demonstrate alternative opportunities in farming and agro-based industries such as crop diversification, organic production methods, and production of high-yield and high-value crops. A farmer-led entity might also support younger people interested in food and farming entrepreneurship to launch businesses that directly link agricultural production to processing facilities, or conduct small-scale processing themselves. Due to the high level of investment but lower rate of employment in the district's agro-based industries, untapped market potential in this area may

exist. The entity could also extend its mission to include a system-wide approach to food and farming support in Khordha District.

A farmer-led entity, such as an NGO in partnership with local government, could address multiple challenges that farmers, and likely small-scale processors, currently face in the district. In addition, the entity might support street vendors, to protect the informal market for fresh produce that contributes to the city and district's overall economic growth and food security. A system-centric, equity-focused entity that supports economic viability among all food system stakeholders could offer a comprehensive approach to addressing challenges and offering solutions, leading to a positive ripple effect across the food system.

CONTEXT MATTERS

4.3 URBAN-RURAL LINKAGES FOR A STRONGER FOOD SYSTEM IN CLARENDON, JAMAICA



Adapted from Map No. 3977 Rev. 6
United Nations
November 2019



Figure 4.9
Location of the Parish of Clarendon

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

The parish of Clarendon is located in the central county of Middlesex, one of three counties in Jamaica. Political leaders, government officials and staff, and food systems stakeholders of this region are committed to strengthening and leveraging the parish's food system. Clarendon is bordered by the parish of St. Catherine to the east, Manchester to the west, St. Ann to the north, and the Caribbean Sea to the south (Figure 4.9).¹⁷⁴ Jamaica's third-largest parish after St. Catherine and St. Ann, Clarendon covers about 1 196 sq.kms, or 462 square miles. Clarendon is home to over 200 000 residents who live in 342 settlements consisting of towns, townships and villages (commonly known as districts in Jamaica). The capital town is May Pen (population 61,548); other towns include Kellits, Frank Field, Milk River, Hayes, Freetown, Chapelton, Lionel Town, and Spalding.^{175, 176}

From a bird's-eye view, Clarendon appears as a vast plain between mountains towards the north and coastal communities to the south. Its topography is undulating except in the north and northeastern regions, where the Bull Head and Mocho mountains are located.¹⁷⁷ Clarendon has five main waterways, the Rio Minho, Milk River, Pindars, Cave River, and Thomas River. The Milk River Bath, which lies south of May Pen, is one of Jamaica's greatest mineral spas.¹⁷⁶ Jamaican Patois, an English-based language with West African influences, is widely spoken.¹⁷⁸



Table 4.7 Land use in Clarendon Parish, 2016^{180, 181}

Parish Land Use	Woodland	Agriculture	Residential	Vacant property	Wetland	Industrial	Other
Portion of land occupied (%)	55.21	18.44	13.78	5.6	3.26	1.06	2.66

Land types and uses

The parish is characterized by scattered villages and small urban centers set among vast areas of sugarcane, wetlands, dry forests, scrub, and industrial estates.¹⁷⁹ Throughout the parish, woodlands tend to be the most dominant land use, occupying about 55.2 percent of the parish (Table 4.7). Agriculture is the second largest land use in the parish, covering 18.4 percent of the land, followed by residential land use (13.78 percent).¹⁸⁰ Agricultural uses cut across land use types: farming occurs on agricultural land, and residential areas house home gardens. Similarly, food processing facilities in homes, on farms, and in industrial areas are prevalent as well.

Climate

Due to the location of Jamaica, the sea and the northern trade winds influence its tropical climate. The island's weather is marked by two wet and two dry seasons.¹⁸²

Clarendon has varied microclimates, ranging from cool climatic conditions in the northern region to high temperatures on the plains. Such diversity makes Clarendon suitable

for a range of tropical crops. The unpredictability of the climate can result in water shortages such as the drought conditions that occurred in multiple parishes, including Clarendon, in the summer of 2018.¹⁸³ Heavy rainfall in the region can result in flash floods, such as those that affected the island in the summer of 2017.¹⁸⁴ The negative financial impact of major climate events on the agricultural sector was estimated to be 14.4 million JMD (113 635 USD) between 1994 and 2010.¹⁸⁵

Clarendon's average maximum temperature is approximately 29.5° Celsius (85° Fahrenheit), with an average minimum of about 17° Celsius (62.6° Fahrenheit). The parish experiences dry periods and recorded the lowest 30-year mean rainfall compared to all parishes in Jamaica between the years 1971 to 2000.^{180, 186}

Population

As of 2012, Clarendon was home to 246 322 residents, which is 10 percent of the country's population.⁸¹ Of the total parish population, approximately 65 percent live in rural areas, and the remaining 35 percent live in urban areas.¹⁸⁷

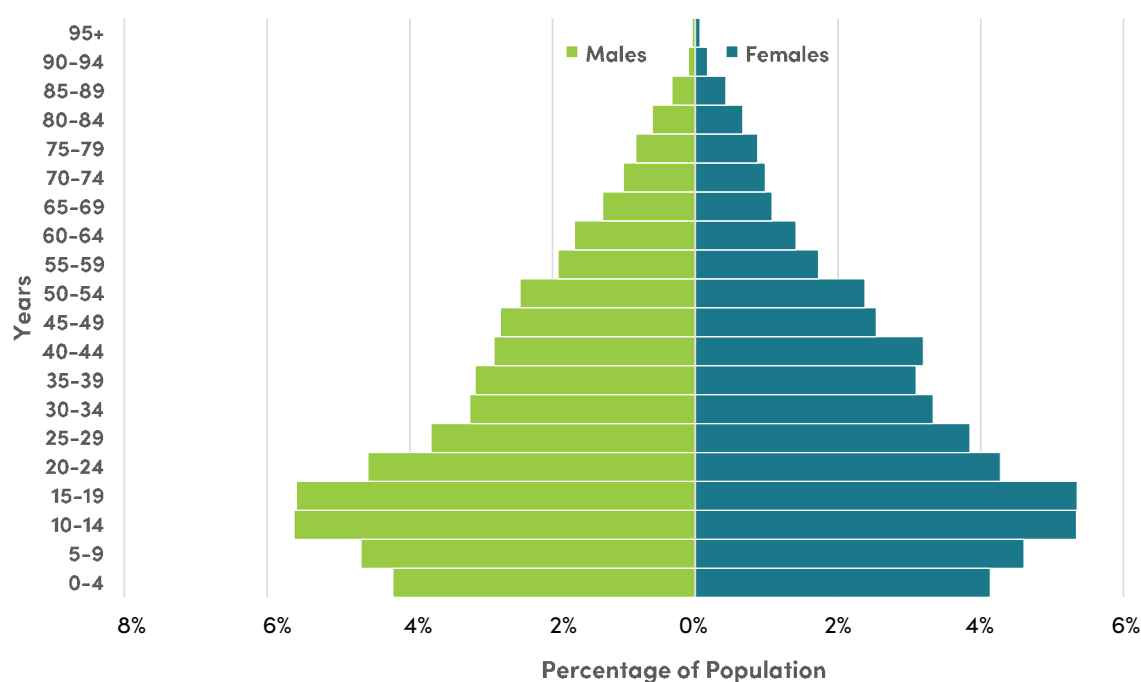
The parish capital town, May Pen, a bustling urban center, has a population of 61 548. The population of May Pen grew rapidly between 1970 and 1984, by 57.8 percent. The population grew by another 20 percent between 1984 and 1991.¹⁸⁸ Between 2001 and 2011, only May Pen and two surrounding towns experienced population growth, while all other special areas decreased in population.⁶⁶ Rapid population growth has impacted land use patterns in the city, which has triggered housing development and the commensurate conversion of agricultural land to other uses.¹⁸⁰

The parish has a significant proportion of youth in the general population (Figure 4.10). Approximately 80 percent of the population is younger than 50 years. The town of May Pen has a large youth population as well; approximately 53 percent of the population is younger than 24.¹⁸⁸

Employment

Unemployment is relatively high in Clarendon. According to 2011 data, Clarendon's unemployment rate of 15.4 percent surpassed the national average of approximately

Figure 4.10 Population structure of Clarendon, 2012



13 percent.¹⁸⁰ The 2002 Jamaican survey of living conditions found that the poverty level among households in Clarendon was approximately 27.2 percent, compared to the national rate of 15.2 percent.^{189,}

¹⁹⁰ Approximately 7.9 percent of Jamaica's homeless population is located in Clarendon.¹⁹⁰

Educational attainment

Most people in the parish have received formal education. Data from the 2011 census indicates that less than 1 percent of the parish's population (roughly 1 072 residents) has had no formal education.¹⁹¹

Approximately 90 percent of the parish's population^{xxxv} has attended primary or secondary school. However, only 6 percent of the population has completed university or tertiary-level education, suggesting an opportunity to strengthen higher education in the parish.

Public health

Public health data for the parish are limited. National studies suggest that hunger and diet transition are significant concerns, especially among youth. The rate of underweight children in the parish is 5 percent, and the rate

of stunting under the age of five is 2.9 percent, compared to 5.7 percent in Jamaica overall as of 2012.^{192, 193} In a 2005 national survey of adolescents aged 10-14, 1 in 4 children reported being hungry due to lack of food at home. A recent article reported that in 2006, 90 percent of Jamaican adolescents frequently consumed sweet beverages, and less than 20 percent consumed vegetables at or above recommended levels while prevalence of adolescent overweight and obesity was estimate to be 25 percent.^{194, 195} Strengthening the

^{xxxv} Data for individuals older than 3 years of age.

food system in Clarendon may be an opportunity to improve diets in the parish.

Local government structure

The national constitution of 1962 determines the government structure of Clarendon. The Governor-General is the head of state and has the authority to determine the date of general elections and to appoint ministers. The Governor-General works under the advisement of the Prime Minister, who heads the executive cabinet. Various national agencies and commissions select managers and/or directors to oversee work in each parish. The Rural Agricultural Development Authority (RADA), created in 1990 to promote agricultural development in Jamaica, Social Development Commission (SDC), and Jamaica Agriculture Society (JAS), have distinct directives that support each sector of the food system, from agricultural production, processing, distribution, and retail, to consumption, including diet and health.¹⁹⁶

Local government functions are executed through the decentralized Clarendon Municipal Corporation. The municipal corporations are split into two arms: the political and the administrative. The mayor leads the political side of the corporation, which also comprises the councilors who make policy. The administrative arm is led by a manager who advises and implements the policies created by the mayor and the council.¹⁹⁷ The Planning and Development

Department is responsible for services related to plan-making, building, construction, and development in the parish.

A non-governmental organization plays a key role in the governance structure of the parish. Following national guidance, every parish has established a Parish Development Committee (PDC), which acts as a liaison between government decisions and actions and local, grassroots organizations and councils at the town and village levels, and ensures that local development goals are met.¹⁹⁸ Rather than launching or leading local actions, the PDC supports existing structures and communicates challenges and opportunities to elected officials at the parish level.

As a non-governmental organization, the PDC can apply for funding that the parish council or municipal corporation cannot access. PDC members coordinate external and local funding sources and build capacity by applying for grants. Municipal Corporation staff then provide technical, on-the-ground support to implement funded projects. The PDC comprises volunteers from civil society, businesses, local and state government, and others who sit on various sub-committees with specific focus areas (e.g., youth and child protection, climate action). When making policy decisions, the parish council relies on the PDC to provide details about the experiences of parish residents, and the PDC ensures continuity of policy

implementation even as political leadership changes.¹⁹⁹

Economy

Clarendon's economy depends heavily on the agriculture and service sectors, with smaller proportions of economic growth from mining, manufacturing, and (some) tourism. Clarendon currently produces a variety of crops; sugarcane, coffee, citrus, banana, ginger, cocoa, and vegetables are grown for export. Sugarcane produced in Clarendon has been one of the largest contributors to Jamaica's volume of exported sugarcane.²⁰⁰ The agricultural sector alone contributes over 600 million JMD (4 734 813 USD) annually to the parish economy.¹⁸⁰ The mining of bauxite is especially prevalent across Jamaica, and in Clarendon was previously a key source of the parish's economic prosperity. However, the mining companies moved elsewhere in the early 2000s, leaving a depleted bauxite source and prompting reliance on the agricultural sector. The service sector is also rapidly expanding, particularly in urbanizing areas, and comprises primarily wholesale and retail trades and financial institutions. The manufacturing of sugarcane and food processing (bakeries, dry goods) is common.¹⁸⁰

Micro, small- and medium-sized enterprises (MSMEs) generate most of the jobs in Clarendon. Among all employed parish residents, about 86.3 percent work in the private

Table 4.8 Number of farmers by age and sex in Clarendon, 2007^{181, 202}

	AGE RANGE IN YEARS								Farmers of all genders	% of all farmers
	<25	25-34	35-44	45-54	55-64	65-74	> 75	Not Reported		
	NUMBER OF FARMERS									
MALE	1 336	2 661	3 268	3 190	2 387	1 731	1 029	28	15 630	64.74
FEMALE	314	1 264	1 753	1 664	1 104	861	544	8	7 512	31.12
Gender not Reported	76	176	219	197	138	119	68	7	1 000	4.14
Farmers of all genders	1 726	4 101	5 240	5 051	3 629	2 711	1 641	43	24 142	100.00
% of all farmers	7.15	16.99	21.70	20.92	15.03	11.23	6.80	0.18	100.00	

sector, which comprises primarily MSMEs. Many residents run their own businesses; 38.33 percent of residents in the parish are self-employed.¹⁸⁰

Agriculture and food system

With a strong history of agriculture, Clarendon has the potential to create and leverage its local food system for greater benefit to the region. A diverse, hardworking group of smallholder farmers, aggregators, processors, and retailers move food from farms to consumers, both locally and beyond the jurisdiction of Clarendon. Census data from 2007 estimates that there are 24 142 farmers within the parish.⁸¹

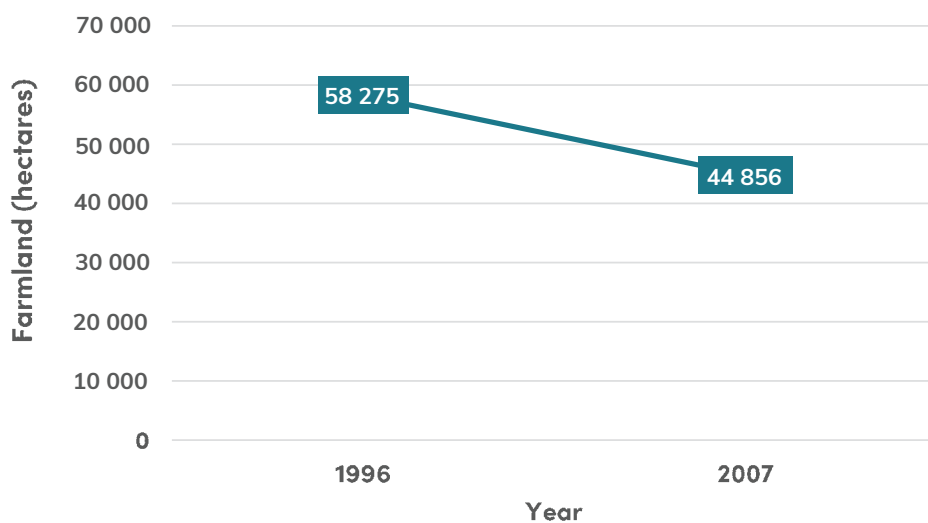


Roadside produce retailer

Table 4.9 Farms by land area in Clarendon, 2007¹⁸¹

		Land-less farmers	<1	1 to <5	5 to <10	10 to <25	25 to <50	50 to <100	100 to <200	200+	Total
Number of farms	NO.	4 615	18 996	7 783	541	186	37	24	9	12	32 003
	%	14.42	59.36	24.32	1.69	0.58	0.12	0.07	0.03	0.04	100.00
Parish area (ha) in farming	NO.		6 462	15 284	3 607	2 642	1 311	1 668	1 182	12 699	44 856
	%		14.41	34.07	8.04	5.89	2.92	3.72	2.64	28.31	100.00

Figure 4.11 Change in farmland, 1996-2007²⁰³



^{181, 201} Male farmers outnumber female farmers, constituting 64.74 percent of all farmers (Table 4.8). 66 percent of all farmers are under the age of 55, and farmers between the ages of 35 and 44 are the largest group (21.7 percent). Clarendon's agricultural workers are also important nationally, representing approximately 8.7 percent of agricultural workers.

Within the parish, agriculture occurs on 32 003 farms, which represent 14 percent of all farms in the country. The total amount of farmland in the parish has declined in the last decade, decreasing from 58 275 hectares in 1996 to 44 856 hectares in 2007 (Figure 4.11).

Smallholder farming is crucial to Clarendon. In Clarendon, 59.6 percent of the farms (with land) operate on areas smaller than one hectare (Table 4.9).¹⁸¹ Of the 44 856 hectares used for farming, a significant portion (34 percent) comprises farms between one and five acres in size. Of the agricultural land in the parish for which farmers reported data, 53 percent is sown for agricultural crops (Table 4.10). Of the total area used for crops, 55 percent is used to grow crops for export and 20 percent is used to grow crops for domestic consumption. Clarendon farmers produce sugarcane, coffee, citrus, cocoa, and vegetables for export.²⁰⁴ Many also grow food for their own consumption, including okra and greens (locally known as callaloo).

Most farmers rely primarily on their farms as the source of their food, and some are able to produce enough food to share with their extended families.²⁰⁵⁻²⁰⁸ For some, ensuring food security for their families was part of their motivation to begin farming. As one farmer shared, “I decided that I’m not going to stay hungry, I prefer to go and lease a piece of land and plant food to help the family.”²⁰⁷ Farmers reported that they had less stress related to the amount or cost of food to feed the household as a result of growing their own food.²⁰⁵⁻²⁰⁸ Many also highlighted their increased appreciation for food as a result of having grown it themselves. One farmer said, “When it comes to growing provision, I love that. I work with that, because the fact is that I did it and I’m feeding myself,

and when you can feed yourself it’s nice.”²⁰⁵ Another farmer shared that they feel their family benefits from farming as “we have become more appreciative of things. The things that are growing, we appreciate that more.”²⁰⁸ As land in farming decreases, farming may become a less viable form of employment and farming communities may experience lower food security or worsening health outcomes without local government policy supports.

Processing, aggregation, and packaging of raw agricultural products occurs in Clarendon parish at multiple scales, with a strong presence of Jamaican-owned businesses. Small-scale processors might produce their own raw materials or purchase them from local farmers to process and sell

Table 4.10 Uses of agricultural land for selected farms in Clarendon, 2007¹⁸¹

	Type of Land Use						
Characteristics of Reporting Farms	Crops		Pasture	Timber Forest	Ruminate and Fallow	Other Land	All Agricultural Area
Area (in hectares)		22 996	1 581	556	15 720	2 895	43 748
	Pure Stand	20 584					
	Mixed Stand	1 872					
	Food forest	540					
Proportion of all Agricultural Area %		53%	4%	1%	36%	7%	100%

at roadside shops or markets.²⁰⁹⁻²¹² Individual farmers may also process some of their crops. Farmer cooperatives may decide to conduct value-added activities for additional income.²¹² Some processors operate at the middle of the value chain, purchasing primarily from farmers in Clarendon and surrounding parishes and soliciting contracts with farmers to source specific raw products, such as Scotch bonnet peppers, ackee, lychee, and callaloo, for canned and processed items.²¹³ Those processors distribute primarily to international distributors and wholesale companies.

The larger-scale processing and packaging companies, often considered food manufacturers, such as Spanish Grain and Grace Kennedy, may dedicate entire staff members to build trust and accountability, set up transportation networks, and provide technical support to farmers to ensure high-quality and steady supply.²¹⁴ The processors act as aggregators, sourcing food from across the island to package and sell to retailers or process into new forms. In some cases, large-scale processors guarantee a price and quality for certain crops at the beginning of the season through contracts.²¹⁵

Some aggregation and distribution within Jamaica's food system depends on *higglers*. Farmers are often unable to go to markets due to constant work on their farm and cannot store products due to the lack of cold storage; so they sell to higglers, or independent street traders, who act as aggregators,



Community members showcase freshly packaged seasonings

moving from farm to farm to purchase produce. They then sell the produce at markets, local restaurants, or other fruit stalls. Higglers sell the products at a higher price, in part to cover the high cost of transportation between farms and markets.²¹⁶ The May Pen market is the largest in Clarendon, and farmers and higglers come from across the parish and from neighboring parishes to sell there.

While the higgler system is a common form of food distribution in Clarendon and Jamaica, there are other methods as well. Some farmers sell to local food processors, who then sell the finished product to businesses in the parish or other parts of the country.²¹⁷ For example, a sugarcane processor may buy sugarcane in bulk from a local farmer, process the cane, and then sell the refined finished product to a business in Kingston.²¹⁷

Other farmers sign contracts to sell to restaurants, hotels and other hospitality sectors, or schools in the area as well as larger companies such as Red Stripe Beer, which purchases cassava from some farmers in Clarendon.²¹⁸ However, these types of outlets offer a limited demand market to smallholder farmers.

Various local food retailers and food service operations exist in Clarendon, ranging from small-scale grocery stores to restaurants to baked goods shops. Many entities benefit from the proximity to smallholder farmers, particularly in and around May Pen. Grocery store and restaurant owners purchase produce directly from area farms, reporting that it is fresher than what is available at markets where produce may come from distant locations in Clarendon.^{209, 210, 219} Retail operations often double as wholesale and/or packaging facilities and provide a range of

goods and services in a community and, in some cases, appear to be the primary source of raw materials for other retailers and individual households. Several May Pen-area restaurants purchase produce directly from farms. These restaurants see a strong economic benefit of purchasing produce from farms, as the prices are lower than those of markets, and the quality and freshness of their food is key to attracting customers.²²⁰⁻²²³

Relationships between farmers and restaurants seem to develop informally through social networks or targeted government initiatives. In addition, some home-based retailers also sell their products to restaurants and larger supermarkets.^{209, 210, 219, 224}

Although formal food waste management initiatives appear limited, municipal leaders have recently developed plans that reflect interest in organic waste composting.^{66, 225}

Existing public policy initiatives

Clarendon has an array of existing policies and plans related to food system sectors, which may result from inter-agency collaboration and multi-tiered, strategic community engagement strategies. Many of the programs are initiated at the national level, and then adjusted to meet specific needs at the parish level. To identify gaps and leverage assets across economic and social sectors in the parish, several government agencies have dedicated government staff positions to work directly in communities. Civil society groups offer direct lines of communication between grassroots community groups and

policymakers. Through the network of individual and departmental actions, many opportunities and challenges in the parish's numerous communities appear to be tied to documented planning and policy goals. Yet, there remain disparities across populations and challenges to the food system related to ancillary sectors such as storage, road infrastructure, and water systems.

Rural Agricultural Development Authority (RADA) training program
The national Rural Agricultural Development Authority (RADA) offers farmer training programs and access to equipment and encourages farmers to participate in cooperatives at the parish level, through RADA extension officers who oversee various towns. Additionally, the district's 4H clubs have an initiative to train high school students in food processing, crop cultivation, and animal husbandry.^{226, 227}

Investment in agriculture infrastructure

A national program to launch 14 agro parks across the country has provided support for four sq.kms (400 hectares) of farmland in Clarendon. The agro parks ensure "good agricultural practices and intensive production" (p.549, Clarendon Sustainability Plan) by providing necessary infrastructure support to farmers through road networks, irrigation, and packing houses.⁶⁶ Agriculture extension agents also provide ongoing support to farmers in the agro parks.²²⁷ The agro parks have been linked to increased local economic growth and food security for the region.

Local Economic Development Support Programme (LEDSP).
LEDSP is a nationwide program carried out by the Social Development Commission (SDC) offices in three parishes in Jamaica (Kingston and St. Andrew, St. James, and Clarendon) and has been funded by the Ministry of Local Government and Community Development since 2015.²²⁸ The program bolsters regional economic growth by providing grants of 10,000 JMD to 30 000 000 JMD (78.92 USD to 236 742.84 USD) to small- and medium-sized enterprises, through an application process. Entrepreneurs in Clarendon received over 69 million JMD (544 503.28 USD) during fiscal year 2017–2018 for various projects, of which 60 percent were agriculture-focused or related to another food system sector. Between 2016 and 2018, 48 percent of the national program's resources were allocated for Clarendon, for a total of 145 170 300 JMD (1 145 592 USD) among three parishes.²²⁹ The program supports participants through four components: capacity building, networking and building partnerships, direct fiscal support, and implementation of an incentive scheme for hiring employees and growing their income sources. SDC staff offer business coaching, legal support, and documentation activities directly to business owners.²²⁹

A handful of the LEDSP funding recipients are also part of Clarendon's Youth in Business program, a Local Economic Development Office (of the Clarendon Municipal Corporation)



One of the many cassava farms in the Ebony Agro-Park in Clarendon

parish-wide initiative to provide guidance and financial support to young adults with business ideas and entrepreneurial potential or capacity. The program, launched in 2016, provides small grants of up to 100 000 JMD (789.12 USD) to youth ages 18 to 35. Many of the program's participants are involved in agriculture as well.^{229, 230}

Another LEDSP initiative is hosting crop-focused agricultural festivals to amplify residential creativity, foster entrepreneurship, stimulate the local economy and address social challenges. The festivals encourage residents to create products to showcase local produce from Clarendon, such as at the Rock River Mango and Sorrel Festival.

The Town and Country Planning (Clarendon Parish) Provisional Development Order. The Clarendon Provisional Development Order is a written form of zoning codes to guide

local planning actions. Produced by the National Environmental and Planning Agency (NEPA), a Provisional Development Order exists for each parish and addresses regions identified as priority areas for sustainable, economically and environmentally sound growth and development. The updated order for Clarendon was published in the Jamaica Gazette in the summer of 2017 and will become confirmed after approval by Central Government. The 670-page plan allocates zoning to nine local planning areas in Clarendon, with 14 classes^{xxxvi} of zoning.²³¹ The NEPA recognized the threat that climate change poses to food security in each planning area in Clarendon. Concerning land conservation, on page 154, the order states:

The local planning authority will attach major importance to the need to safeguard agricultural

production in all their decisions concerned with development in the countryside and refuse planning permission for or otherwise oppose changes of use or development involving the subdivision of agricultural land into unproductive units. This consideration will be informed in part by food security considerations occasioned by climate change.^{231, 232}

The order also states on page 172, that to further protect agricultural land from development pressures, “non-agricultural activities should not be encouraged until lands reserved for other uses are exhausted”.^{231, 233}

The order supports the preservation of major fishing sites and fishers' livelihoods along the southern coast of the parish. On page 82, the order states that any land management policies must ensure conservation of the natural environment and “prevent any increased marine and coastal contamination and degradation including those attributed to climate change (e.g. sea level rise, storm surge and erosion), which would adversely affect sectors, particularly the tourism and fishing industries”.^{231, 235} On page 158, the order further seeks to support fishing in the Rocky Point community: “The planning authority will support any action

^{xxxvi} Classes of zoning include shops, financial and professional services, restaurants and cafes, drinking establishments, hot food takeaways, business, general industry, storage or distribution, hotels, residential institutions, secure residential institutions, dwelling houses, non-residential institutions, assembly, and leisure.

taken to ensure that the fishing beach has the necessary storage, selling and waste disposal facilities”.^{231, 236} The order also recognizes, for multiple planning areas, that farmers’ success depends on the extent to which they can sell their produce; thus, the order supports the development of farm shops for the sale and distribution of local crops. To ensure attention to farm shops, on page 194, the order states that “the local planning authority will support the identification of lands for a site for a cash crop vendors outlet in Toll Gate”, a community in Clarendon that is near one of the parish’s two agro parks and shares a border with the neighboring parish.^{231, 237}

Clarendon Local Sustainable Development Plan (CLSDP). Led by the Clarendon Planning and Development Department, the CLSDP is a parish-wide development plan created through multi-stakeholder engagement and adopted in 2016. The 626-page CLSDP mirrors the national development plan, Vision 2030 Jamaica, which was created by the Planning Institute of Jamaica. In contrast to the Provisional Development Order, the CLSDP was authored by multiple local stakeholders from government, civil society, and community groups and complements the broad goals outlined in the Provisional Order. The CLSDP was created with the foundational planning process developed by the National Environmental and Planning Agency (NEPA).

The collaboration between the Clarendon Parish Council, Social

Development Commission, and the Clarendon Parish Development Committee began in 2005 and resulted in the creation of the CLSDP proposal. However, effective execution was not possible until additional funding was secured in 2013 from the Ministry of Industry, Commerce, Agriculture and Fisheries, and one of its sub departments, the Sugar Transformation Unit.¹⁸⁰ Residents, agencies, and other stakeholder groups and organizations were invited to sector meetings, workshops, and symposiums.

The process of engaging residents began in 2010 with a Clarendon Visioning Symposium.¹⁸⁰ Residents were also engaged through a series of eight Situation Validation and Visioning Workshops held in 2014 across the parish, in which over 357 residents participated.¹⁸⁰ Unlike the workshops, the sector meetings focused on agencies and other stakeholder organizations and groups.¹⁸⁰ In total, 12 sector meetings were conducted and over 50 organizations and groups participated.¹⁸⁰ The plan’s creation was funded with 20 000 000 JMD (157 828 USD) from the Sugar Transformation Unit, a group created through a partnership of the European Union and the Government of Jamaica.

The CLSDP’s vision is to create “a thriving Parish with a healthy, educated and creative population that lives in safe and attractive communities” (p. 26).¹⁸⁰ As described in the plan, leadership at multiple levels seeks to transform Clarendon into a place that “affords its citizens a

high standard of living with adequate access to first class infrastructure and services, including education, health care, and justice” (p. 26).¹⁸⁰ To create this vision, four sustainable development goals were identified:

1. To build climate change and disaster resilience, provide adequate physical infrastructure, and ensure the sustainable management and use of the parish’s environmental resources.
2. To develop a healthy and educated population, which resides in a safe and secure Parish with adequate access to the necessary social facilities and services.
3. To create a strong diversified economy which is built around agriculture, tourism, and manufacturing.
4. To create a parish where government operates in a participative, transparent and accountable manner, and rules and regulations are adequately enforced to guide sustainable development (p. 26).¹⁸⁰

The goals pertaining to environmental action, economic prosperity, social well-being and health, and good governance are further detailed into a series of objectives. The strategic objectives outline the potential challenges of meeting each goal, the parish strategies to address the challenges, and the rationale of the strategies. The objectives are then paired with recommended policies that include specific actions. A key element of the plan is the authors’ clarity

and specificity in linking policy recommendations and actions with proposed timelines and the parties responsible, which may result in greater accountability and transparency as the actions are realized at the community level.¹⁸⁰

Agriculture and food systems are woven throughout the plan and tied to the four main goals and the objectives. To link food systems to environmental action, the parish proposes, in strategic objective 4, to restore mined and quarried land so that it can be used for several purposes, including agriculture and aquaculture.¹⁸⁰ In strategic objective 5, the parish proposes several measures to “reduce agriculture related environmental degradation” (p. 72), such as ecological pest management and conservation tillage.¹⁸⁰ These practices are proposed as part of a wider sustainable agriculture strategy that objective 5b details by promoting agro-forestry practices designed to “reduce agriculture driven deforestation” and “promote habitat conservation”(p. 75).¹⁸⁰

Strategic objective 91A links agricultural practice to climate resiliency by encouraging practices for climate-smart agriculture (CSA).¹⁸⁰ These practices are designed with a mind to “sustainably increase agricultural productivity; to support equitable increases in farm incomes, food security and development; adapt and build resilience of agricultural and food security systems to climate change at multiple levels; and reduce greenhouse gas emissions from agriculture (including crops,

livestock, and fisheries)” (p. 214).¹⁸⁰ Due to the regular extreme weather events that threaten agricultural production, creating climate-resilient agricultural systems is important for maintaining long-term food security and economic viability for farmers in the parish.

To link agriculture to economic development, strategic objective 166 proposes the development of a green economy.¹⁸⁰ To this end, the objective reads, “organic agriculture and sustainable tourism will be promoted, whilst a renewable energy sector and a nutraceutical industry which explores the genetic potential of endemic species will be developed” (p. 353).¹⁸⁰ The plan’s authors make a clear connection between economic growth opportunities and green economy initiatives, demonstrating their recognition of the role of financial investment in the promotion of sustainable business practices. For example, one strategic action focuses on the clustering of (horizontally- or vertically-) related businesses as a way to improve productivity and competitiveness at the national and global scales. Clustering meets other, related development goals such as increasing support for small- and medium-sized enterprises, creating jobs, and building skills training. In partnership with a national scheme, the local Clarendon government will create special zones (or clusters) for related economic activities.¹⁸⁰

The plan makes some connections between the local food system and Clarendon residents’ diets and health outcomes. The plan notes an increase in diet-related chronic

disease as a major health concern. The section highlighting issues and challenges in the agricultural sector notes residents’ preferences for imported foods. The “Eat Jamaica” national campaign was proposed as a solution to encourage residents to choose local foods (i.e., tubers, such as yams, instead of imported rice). In 2003, the Jamaica Agricultural Society launched the national “Eat Jamaica” branding campaign, which focused on reducing food imports and increasing economic reinvestment in agricultural communities by supporting local farmers. Government officials claimed that the national campaign contributed to a 38 percent increase in domestic crop production.²³⁸ To facilitate local procurement, the plan again highlights the development of agro parks and diversification of food products to meet demand, as well as the promotion of home gardening.¹⁸⁰

Several other strategic objectives in the plan discuss broader food system implications. For example, objective 189 explores the need to “develop expanded and new markets for local agricultural products” (p. 384). The plan recognizes the opportunity to directly leverage public sector funding to support food system localization by substituting “imported agricultural products for locally produced goods to the maximum extent possible in any existing or new feeding programmes” (p. 384). The plan highlights opportunities for greater domestic consumption of local foods by strengthening local food branding and public education campaigns through a multi-stakeholder approach.¹⁸⁰

By expanding the market for locally-grown produce, the parish seeks to create a circular economy that reinvests in local businesses both within and outside the food system sectors. Strengthened connections across all sectors and procurement methods may also support the tourism sector. Currently, hotels may worry that local production capacity is insufficient to fulfill large procurement orders. The plan seeks to address the challenge and ensure that more tourism dollars are spent locally by supporting the development of agro parks where food is centrally produced and can be aggregated and redistributed more easily.¹⁸⁰

Challenges and lessons

Food system-sector stakeholders in Clarendon benefit from many innovative policies and planned goals and actions that encourage collaboration among government and civil society agencies, as well as autonomy among entrepreneurs and farming cooperatives. Yet, interviews and field visits with farmers and local stakeholders suggest that planning goals and interagency cooperation may not be sufficient to reach the most vulnerable farmers, processors, and retailers, given the variation of geographic, climatic, and socioeconomic conditions across the parish.^{239, 240} Farmers in the hilly areas may experience greater yields given the higher rainfall and cooler climate, yet they operate farther from markets, leading to high transportation costs or exploitation because of insufficient numbers of higglers or multinational processors. Furthermore, infrastructure (i.e.

road networks, storage facilities, irrigation channels) may not be sufficient in rural areas. In addition, high levels of soil erosion wash away fertile topsoil and can cut off access to farms, negatively impacting food production. Farmers who operate closer to May Pen, or on major thoroughfares, may benefit from closer access to markets but may also face greater competition for limited resources such as agricultural extension services and training.²⁴¹ Agriculture extension agents recognize their own limits, as they are responsible for large geographic areas with farmers who face myriad challenges related to markets, weather, and chemical use and education.²²⁷

The impact of major challenges, including extreme weather events, lack of access to markets, and declining soil fertility and crop yield, is reported across the food system well beyond the farm.²⁴² As smallholder farmers struggle to attain economic security and stability, the food supply required for both food security and niche, high-value export products (e.g., coffee, Scotch bonnet peppers) is jeopardized.²⁴³ A resulting ripple effect is that both small- and large-scale processors and distributors (including higglers) may be unable to obtain the volume of produce required, which in turn drives up the cost of foods purchased by retailers and consumers.

Some mid-scale processing plants rely on smallholder farmers in Clarendon and surrounding districts to create their processed sauces, pastes, seasonings, and canned produce destined for major

distributors in the United States and Europe.²¹³ Processors identify that the high quality of certain products from Clarendon establishes their competitive edge over other Caribbean and Central American countries' exports.²¹³ In light of major changes in weather patterns, mid-scale processors cannot sustain the quantity and quality required to maintain their relationships with overseas distributors. The consequences may range from company layoffs to fewer contracts with farmers.²¹³

Smallholder farmers' challenges related to extreme weather events are strongly linked to water resources. The upper hills are not irrigated, and many farmers lack the funding to install irrigation systems or systems for water storage. During droughts, farmers experience crop loss. When rain does come, it is unpredictable and heavy, leading to flooding.^{240, 242, 244} Extreme weather events, such as Tropical Storm Nicole in 2010, have had tremendous impact on crops and livestock alone in these parishes, not to mention road and transportation networks which connect farms and markets, as well as electricity and water infrastructure. Extreme weather events affect different farmers in different ways, and while many farms suffer, others may hope droughts occur in neighboring areas so that their farms will have a competitive advantage.²⁴⁵ The lack of targeted, flexible support systems for smallholder farming in varied climatic conditions is a barrier to creating an agricultural system that is resilient to extreme weather events and shifting seasonal weather patterns. Although the



Farmers harvesting sweet potatoes

Local Sustainable Development Plan has set goals to reduce the negative impacts of climate change, the parish may lack funding to implement systematic support such as widespread drainage systems.

A lack of access to markets is another key issue for many smallholder farmers. Outside of the more developed city center, there is little access to transportation and limited road infrastructure. Without being able to access markets directly, farmers rely on higglers to facilitate the sale of their goods, which leads to an unreliable flow of income and low returns on the farmers' investments.^{214, 244, 246} Higglers pay farmers for their products based on local market supply and demand, which leads to unpredictable income streams for both the farmers and the higglers.^{218, 245} Farmers, especially those farther from May Pen, indicate a lack of storage

facilities as a major challenge to selling their products outside of their direct communities due to the risk of spoilage.^{239, 244} While there is an opportunity to use cold storage facilities owned by the Clarendon Municipal Corporation (CMC) in the northern towns of the parish, farmers and small-scale processors may not have sufficient capital to rent space in the facilities.^{199, 239, 247} Farmers may also not be well connected to opportunities to sell directly to processors or retailers such as hotels and restaurants, without the support and guidance of agricultural extension agents or through participation in agro parks.^{214, 248} Farmers individually do not have sufficient scale of crop supply to satisfy the demand of food-based business on a consistent basis. Without aggregation and central distribution infrastructure, it will be difficult to implement the CLSDP's strategic goal of increasing local food

purchases by hotels.⁶⁶ Farmers may need additional support, such as subsidized storage facilities, to make and sustain these connections.

The long-term economic viability of agriculture also poses a challenge to some farmers. Some rural youth choose to migrate to urban areas, such as May Pen, rather than to farm, as they perceive farming to be financially risky.^{218, 245} Additionally, some agricultural workers find that their employment is threatened by climate events that ruin crops and leave no agricultural work, or is negatively impacted by the theft of crops and livestock.¹⁸⁵ The declining labor force in some communities is a concern for seasoned farmers, who wonder what would happen to food security and local economic development as agricultural production is expected to decrease in the coming years.²¹⁸ The Local Sustainable Development Plan echoes these concerns about younger residents' waning interests in farming.

A heavy reliance on chemical pesticides, insecticides, and fertilizers is another challenge for the food system. Farmers report that their farmland is not as productive as it was five years ago and that the increasing need for fertilizer is a significant expense. Heavy use of pesticides and herbicides is widespread, but many farmers are not trained properly on their safe use and disposal.²⁴⁹ A lack of awareness about more sustainable techniques to care for their soil and land may also cause farmers to overspend on expensive inputs such as fertilizers, pesticides, and insecticides. In some



Route to a smallholder farm in Clarendon

cases, large-scale processors and distributors might pressure farmers to use certain types of chemicals to reach desired quantity and quality of yield, particularly for export markets.^{214, 242-244}

Limited land rights are a challenge for smallholder farmers.^{241, 250} Opportunities for land ownership are extremely limited. Most agricultural land is owned by the Jamaican government and is leased by farmers.^{214, 218, 249} The cost of leasing land increases frequently, and some farmers find it difficult to keep up with the increases in their annual

lease payments. Some farmers work on land that is unregistered or abandoned by absentee landowners. The few farmers who do own their land often lack legal documentation to illustrate control over land.²⁴¹

Finally, a major conflict may exist between a societal narrative that highlights individual responsibility of residents and the invisible role of institutional or international players in controlling price and availability of foods in an increasingly globalized market. In its analysis of the health and diet-related behaviors of Clarendon residents, the Local

Sustainable Development Plan encourages individual residents to make purchasing decisions that lead to positive health outcomes and support local farmers. Yet, targeting individual behaviors of residents may not fully capture the structural or cultural factors that constrain their food purchasing choices, such as the lower prices of imported foods or inaccessibility of local food products.⁶⁶

Opportunities for transformation

Clarendon offers tremendous opportunities for strengthening and leveraging its food system. The parish has inter-agency collaborations and precedents for progressive plans (e.g., the Local Sustainable Development Plan) that allow local government and stakeholders to strengthen and leverage the food system for improved environmental protection, local economic investment, and farmer support. The following ideas may speed up the process of transitioning from opportunity to innovation in Clarendon.

Reviewing and building on prior plans to develop a food systems addendum to the CLSDP.

The Clarendon Local Sustainable Development Plan (CLSDP) frequently refers to each sector of the food system, from production to waste management and consumer health. Yet, the document is lengthy and may not be a readily accessible tool for planners or other government staff and groups working in communities. The community might effectively reach the CLSDP's broader economic, environmental, and social goals through a complementary food systems plan, or addendum, that synthesizes the CLSDP goals and objectives related to the food system sectors. In many communities in HICs, food systems plans are connected to long-term strategies for economic, social, or agricultural development (see Section 3). As a subset of the CLSDP, a food systems plan could have both short- and long-term goals and provide

clear direction for staff, such as establishing communication channels between agriculture extension agents, leaders of farmer community groups, and policymakers. Led by a combination of stakeholders and the planning department, a food systems plan could also indicate areas for research and development in agriculture and other food system sectors that might provide additional

data and rationales to advance related goals (environmental, social) of the CLSDP.

Public-private partnership in food systems education. Government investment in additional agricultural extension workers would address the appropriate use of chemicals through integrated pest management (IPM) and locally available soil



Market vendor reaching for ackee, the national fruit of Jamaica

amendments. Additionally, investing in higher-level agricultural education for youth that encourages multiple types of food system engagement, including agricultural technology and R&D, would strengthen human resources. Funding could also come from financial incentives paid for through public-private partnerships with larger-scale retailers and processors who want farmers to be successful. Incentives could be offered to rural and poor youth to benefit from the program, with the intent to place youth in the food systems sector in Clarendon.

Facilitating access to land and land ownership. Access to land and land ownership are ongoing concerns in Clarendon. The rising cost of renting land presents a barrier to smallholder farmers, and the titles proving ownership may be lost. Exploring strategies for sharing and accessing lands, such as through public or civic land trusts, land banks, or farm incubators, could help protect land for farming.

Given local government agencies' investment in agriculture and food businesses, a government-run land bank might allow the Clarendon Municipal Corporation to control land for food production in urban and peri-urban areas, thus protecting the land from development. In some cases, land banks are used to support commercial development on protected land with access to infrastructure in order to incentivize investment from industry. Unlike agro parks, land banks are governed by local government, farmers

themselves, or both, and do not rely on national or corporate support. Such land banks are modeled in other cities such as Rosario, Argentina.²⁵¹ As urbanization continues, it is important to conserve high-quality farmland in multiple areas to ensure that regions can continue to meet their food production needs in the future.

A vast amount of land in the Clarendon plains is arable, many hectares of which are privately owned and underutilized. Although local government support for land reform is important, local policy has a limited reach. National policy change and partnerships will be necessary to fully facilitate access to agricultural land. In particular, two government agencies, National Land Agency (NLA) and Land Administration Management Programme (LAMP), could work aggressively to document vacant lands in the parish and allow the sale, lease, or other long-term access to landless individuals.

Supporting smallholder farmers through infrastructure. Clarendon leaders could explore ideas for strengthening the infrastructure for smallholder farmers and minimizing their financial risks through direct action and funding from the municipal government and related departments (i.e., RADA, SDC).

Strengthening the cold supply chain in the food system could help prevent crop spoilage and reduce the risk of foodborne illness. Resurfacing and improvement of farm access roads would improve farm access.

Provision of rainwater harvesting, gravity fed irrigation, and storage infrastructure in the hillier areas would ensure year-round water access. Implementing a drainage program to control flooding in low-lying lands would benefit farmers in agro parks as well as on individual plots. Extension officers or municipal staff could connect farmers with the meteorological office through smartphone technology for continuous information about current and projected weather conditions, to give farmers time to adjust harvesting plans, for example. Providing support for financial stability is crucial for smallholder farmers in Clarendon.

Crop insurance, for example, would reduce farmers' financial risk of harvest loss due to extreme weather events. Similarly, helping smallholder farmers to access markets would grant them additional financial stability. Shared transportation options, for example, would broaden farmers' choices beyond the higgler system, allowing them to directly access markets and obtain better prices for their crops.

Financial security for farmers needs to go beyond having market access. Due to their fluctuating revenue streams, many farmers do not have collateral to obtain loans for improving operations. Local government and local financial institutions could facilitate strategies for rethinking the criteria for providing loans to farmers. Farmers could use the credit for improvement of farm infrastructure such as post-

harvest facilities for food safety, crop washing facilities, small-scale food processing units, or building restrooms on farm sites.

Finally, accelerated support to help farmers diversify the use of their crops may also offer opportunities for diverse streams of revenue. For example, Clarendon is well known for pumpkin production. To increase farmer revenue, farmers could be supported to produce value-added products such as pumpkin flour, pumpkin punch, pumpkin pie and soup mix. Diversification of crop uses is also an efficient way to cut down on over supply of pumpkins, and potential loss of harvest.

Increase the market visibility of Clarendon-grown foods. Clarendon’s agricultural sector produces various specialty foods that could be sold locally and regionally. The establishment of a Clarendon “Buy Local” public education campaign would help to keep money in the local economy rather than flowing out through imported food purchasing. A parish-centered brand modeled after the national “Eat Jamaica” campaign could generate interest in local food purchasing through targeted marketing to large institutions such as schools and hospitals, the hospitality sector, as well as to individual households. There is some precedent for parish-level branding. The “Eat Jamaica” campaign has launched multiple programs to facilitate local food purchasing programs in parishes, including “Eat Jamaican Month,” which encourages each parish to highlight certain indigenous crops through various

events every November.^{252, 253} With capacity-building support from the Local Economic Development Support Programme of the Social Development Commission, one community with substantial mango production in Clarendon hosted its

first-ever Mango Festival in July 2018 to increase local purchasing and awareness of the fruit.²⁴⁸ A parish-wide branding campaign would not only help to maximize farmers’ profits, but it would also improve the parish’s overall financial



Professionally installed irrigation system supplying crops with water sourced from the National Irrigation Commission (NIC)

security. In addition, a branding campaign that identifies certain niche food items, such as Scotch bonnet peppers, as Clarendon-grown might be compelling for Clarendon or Jamaica-based wholesalers or processors that seek competitive slants for the export market.

Purposeful land use planning, stewardship, and management. The proposed zoning plan for Clarendon calls for protection of agricultural land from development. Yet, implementation and monitoring of land conversion may be challenging. Currently, the staff size of the planning department is limited, and the responsibilities are vast. Creative and efficient multi-sectoral collaboration and additional funding will be necessary to ensure that agricultural land is used per existing planning and zoning guidelines.

Sustainable farmer cooperatives. Efforts to establish farmer-led cooperatives may amplify the collective impact of the agricultural sector without over-extending the limited extension staff capacity. Given the small-scale nature of farming and the vagaries of weather events (especially flooding and landslides in Clarendon), farmer cooperatives may suit social and



May Pen market produce stand



Farmer in Clarendon

cultural conditions, allowing farmers to leverage their collective influence to:

- Increase the economies of scale,
- Enhance value-added products which can be effectively and efficiently supported by agencies if cooperatives exist, and
- Increase the ease of traceability of produce to increase food safety and quality for local consumption and export.

Developing and strengthening coalitions with food systems actors locally and globally. There is a history of collaboration among

local government organizations in Clarendon as well as between the public and civic sectors. Furthermore, local government recognizes the importance of farmers and the local food system to the parish. Ensuring that relevant authorities, such as the Parish Development Committee, can secure funding and human resources to implement food systems agendas is crucial. Strengthening existing coalitions, and participating in global coalitions for food systems, such as the CityFood Network through ICLEI (an international organization that supports local governments' efforts to move toward sustainability), may open up new opportunities for

partnerships and funding streams driven by locally identified values, needs, and timelines.

Given the many existing areas of innovation and opportunity, Clarendon is poised to continue to strengthen its food system across the urban-rural continuum through a coordinated effort among local government and food system stakeholders.

CONTEXT MATTERS

4.4 URBANIZATION, LAND TENURE, AND FOOD SYSTEMS IN ACCRA, GHANA



The Accra Metropolitan Area (AMA), home to Ghana's capital city, Accra (Figure 4.12), has a vibrant urban food system. Accra's colonial and postcolonial development and planning history shapes its foodscape.^{xxxvii} Farming of exotic

vegetables and ornamental crops was encouraged within Accra to feed European settlers and to beautify their surroundings.²⁵⁴ However, postcolonial governments were hostile to urban farming for public health reasons. The adoption of strict city bylaws and health inspections to ensure farming-free Ghanaian cities was accompanied

by the destruction of urban farms in 1957.²⁵⁵ The 1970s saw an increase in urban farming, perhaps as an unintended consequence of economic hardships from high foreign debt, drought, and other challenges. The government at the time, the National Redemption Council (NRC), decided not to honor

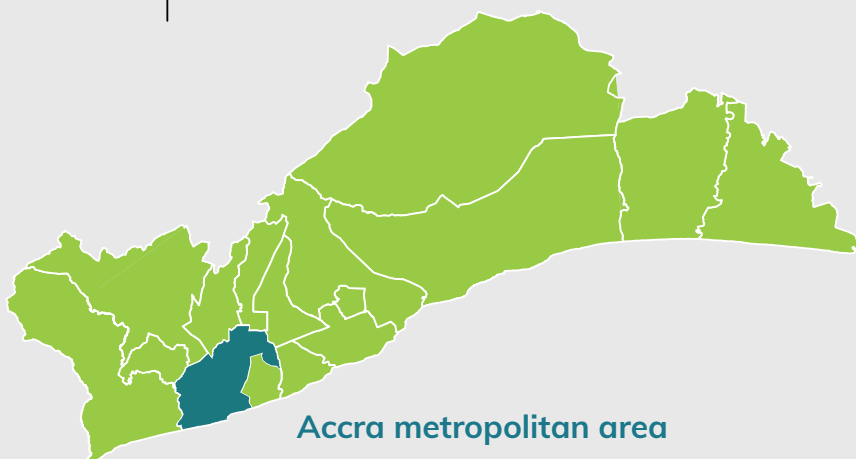


Adapted from Map No. 4533
United Nations
October 2014

Greater Accra Region

Figure 4.12
Location of Accra metropolitan area

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.



Accra metropolitan area

its foreign debt obligations. The international community responded by abrogating foreign aid and exports to Ghana, including its food supply.²⁵⁶ Consequently, the NRC developed a national food policy, Operation Feed Yourself, to boost internal food supply, which unintentionally led to relaxed bylaws and enforcements on food production in urban areas.²⁵⁵⁻²⁵⁶ The current food system in Accra partly reflects this history.

The AMA covers 139.67 sq.kms of land and constitutes the most urbanized area in both the Greater Accra Region and the country in general.⁸⁰ The Gulf of Guinea and four municipalities border the AMA: Ga Central Municipal Assembly, Ga South Municipal Assembly, La Nkwantanang-Madina Municipal Assembly, and La Dade Kotopon Municipal Assembly. The AMA's tropical savanna and semi-arid climate support year-round farming, with an average temperature of 76 degrees Fahrenheit (24.44 degrees Celcius) and two rainy seasons: May–July and August–October. Rainfall is low in this area, averaging approximately 730 mm per year.⁸⁰ The AMA lies within three vegetation zones (shrub land, grasslands, and coastal lands) and is drained by the Odaw River, Korle Lagoon, and other minor streams and lagoons.

Demographic patterns

According to the Ghana Statistical Service, the AMA had a population of more than 1.6 million residents in 2010.⁸⁰ Females slightly outnumber



Farming along major roads in Accra

males: 51.9 percent are females compared to 48.1 percent males. Approximately 47 percent of Accra's residents are migrants born outside of the Greater Accra Region. The largest group of migrants hails from the Eastern Region followed by the Volta Region. As of 2010, 14.5 percent of residents in the region had lived there for less than one year, and 26.1 percent of migrants had lived in Accra for one to four years.⁸⁰ Thus, the already urbanized and highly populated AMA is becoming even denser. The major ethnic group in the area is the Ga people, and popular languages spoken are Ga, Twi, Ewe, and Fante.

Socioeconomic conditions

The 2018-2021 medium-term development plan for the AMA estimates that 70.1 percent of residents 15 years or older are

economically active.²⁵⁷ The AMA's working population is predominantly concentrated in service and sales (38.5 percent), and craft and related trade work (20.1 percent). Skilled agriculture, fishing, and forestry (1.7 percent) and clerical support (3.7 percent) are two of the least popular means of employment.⁸⁰ Trading, construction, fishing, farming, and allied services are the most common employment sectors in this area. Accra still experiences a relatively high unemployment rate (7.2 percent).²⁵⁷ Within the Greater Accra Region, Accra experienced some of the lowest poverty levels (2.5 percent) in 2015.²⁵⁸ Along with reflecting low poverty levels, the 2010 census shows that AMA has high literacy rates.⁸⁰ Overall, 89 percent of the population 11 years and older are literate in English, a Ghanaian language, or French. Forty percent of the population 11 years and older

^{xxxvii} The names AMA and Accra are often used interchangeably, and we retain this practice in this case study.

is literate in English only, and 52 percent is literate in English and a Ghanaian language. In Accra, females are more than twice as likely as males to be illiterate.

Public health

The Accra Metropolitan Area has the highest number of births and deaths within the Greater Accra Region. In 2010, it recorded 32 770 births and 7 276 deaths within a 12-month period. These numbers were the highest in the region. A 1998 survey on nutritional needs showed a prevalence of stunting (low height for age) among almost 18 percent of children in Accra and an overall decline in the nutritional health of children since 1993.²⁵⁹ In 2008, a survey of malnourished children under five years showed that 14 percent of children in Accra are stunted, 6 percent are wasted (i.e., failure to receive adequate nutrition), and 7 percent are underweight.²⁶⁰ Among children between 6–24 months old, about 45 percent in Accra do not meet the minimum feeding practices with respect to food diversity and feeding frequency.²⁶⁰ Furthermore, more than 45 percent of women in Accra are considered obese, which was 15 percent more than the national average.²⁶⁰ Based on caloric intake and proportion of budget spent on food, 24 percent of households in Accra were classified as food-insecure, and 40 percent were classified as food-vulnerable.²⁵⁹

Apart from food-related public health concerns, other pressing public health challenges exist in Accra. Malaria accounts for 92.5 percent of outpatient cases.¹⁵⁹ Diarrhea, hypertension, and upper respiratory tract infections are the other leading

diseases affecting residents. There are also occasional outbreaks of diseases such as cholera. For instance, the cholera outbreak in June 2014 quickly spread throughout the metropolitan area, which affected 6 243 residents and killed 57 others.¹⁵⁹ Poor sanitation drives most of the AMA's public health issues. In 2017 alone, the Metropolitan Public Health Department (MPHD) issued

27 123 statutory notices for offenses such as open defecation, indiscriminate dumping and burning of refuse, defective septic tanks, and unsanitary storage of refuse on premises.¹⁶² To combat the growing poor sanitation challenges, the MPHD director launched the Snipper Enforcement Program in 2017, which aims for rigorous sanitation inspection of residences, food, markets, and other public



A farmer thinning vegetables

Table 4.11 Households in agriculture, 2015²⁶⁵

Location	Households in Agriculture	Households with Crop Activity	Average Farm Size (Ha)
Greater Accra Region	40 673	16 795	1.7
Ghana	2 203 965	1 538 005	6.8

places (e.g., cemeteries). The recently revised AMA bylaws also include provisions on food safety and hygiene.

Agriculture and food systems

Despite being an urbanizing area, farming is prevalent across the urban, peri-urban, and rural zones of the Greater Accra Region, though the characteristics of farming and food systems vary considerably. In 2015, nearly 41 000 households reported having engaged in agriculture in the region (Table 4.11). Although commercial, industrial, and residential areas make up the dominant land uses, the AMA houses two large vegetable farms at Dzorwulu and Korle Bu as well as pockets of farms at Okponglo and areas surrounding the N1 highway. Arable land constitutes approximately 13 percent (1 091 ha) of the metropolitan land area.²⁶¹ The average plot size per farmer in the AMA is less than 0.4 ha, compared to the regional average of 1.7 ha for the Greater Accra Region and the national average of 6.8 ha (Table 4.11). Land parcels for farming are smaller in urban zones, and larger in other zones, whereas land tenure is

more tenuous in the urban zones of the region.

Most farmers are men with an average age of 35 years. In farming households, men engage in land preparation while women are involved in watering, planting, weeding, harvesting, and selling crops.²⁶² These smallholder farmers are mostly migrants (majority Muslim) from the northern parts of Ghana and neighboring countries (e.g., Burkina Faso and Togo), and they have lived in Accra for more than 15 years.^{263, 264} In urban zones of the region, farming is carried out by migrants and in peri-urban and rural areas by indigenous persons.²⁶³

Farming occurs in home gardens and open areas, as well as in what might be unexpected, but strategic locations within an urban context (e.g., areas under high-voltage pylons, fenced private lands yet to be developed, and lands belonging to government agencies).

Some of the major crops grown in the AMA are maize, cassava, and a large supply of vegetables, including tomato, onion, Bawku red onion, lettuce, sweet pepper, okra, mushrooms, cabbage, hot pepper, and cucumber. Farmers plant these

crops throughout the year. In 2017, lettuce (6.354 mt or 6 354 kg) and cabbage (4.487 mt or 4 487 kg) accounted for the greatest average production in the AMA, with total average cultivation areas of 0.26 ha and 0.11 ha, respectively.²⁶⁶ Cucumber (0.03 ha) and sweet pepper (0.063 ha) had the least total average cultivation areas. Crops grown in the urban core tend to be vegetables for sale by farmers, whereas in peri-urban and rural areas crops grown are for sale and subsistence.

Crop farming within the AMA is mostly rain-fed. Some farmers use locally made irrigation pipes (drip irrigation made by farmers) from PVC.^{267, 268} Farmers in urban zones also rely on poor quality water for irrigation (e.g. sewage water). Farmers use chemical fertilizers, but some are switching to more-organic manure because of consumer preference for crops grown with less (or no) chemical fertilizers.²⁶⁸⁻²⁷⁰ Recent crop attacks by the fall armyworm have led to increased use of pesticides.

Most crops produced from home gardening are subsistence-based, except mushroom cultivation, which

is often cultivated for commercial purposes. Many farmers prefer to sell more than 85 percent of their harvests and use the money to buy food for consumption. Farmers' produce reaches markets via traders, many of whom are women, who purchase produce directly on farms, and transport the produce for sale at markets within the AMA.

Governance and planning arrangements

Ghana functions under a three-tier decentralized system specified in the 1992 Constitution, Local Government Act (Act 462), National Development Planning System Act (Act 480), and the current Land Use and Spatial Planning Act (Act 925). The top tier includes the centralized government ministries and agencies. The second tier comprises the ten administrative regions^{xxxviii}, and the third tier consists of the local governments, or Metropolitan, Municipal, and District Assemblies (MMDAs).

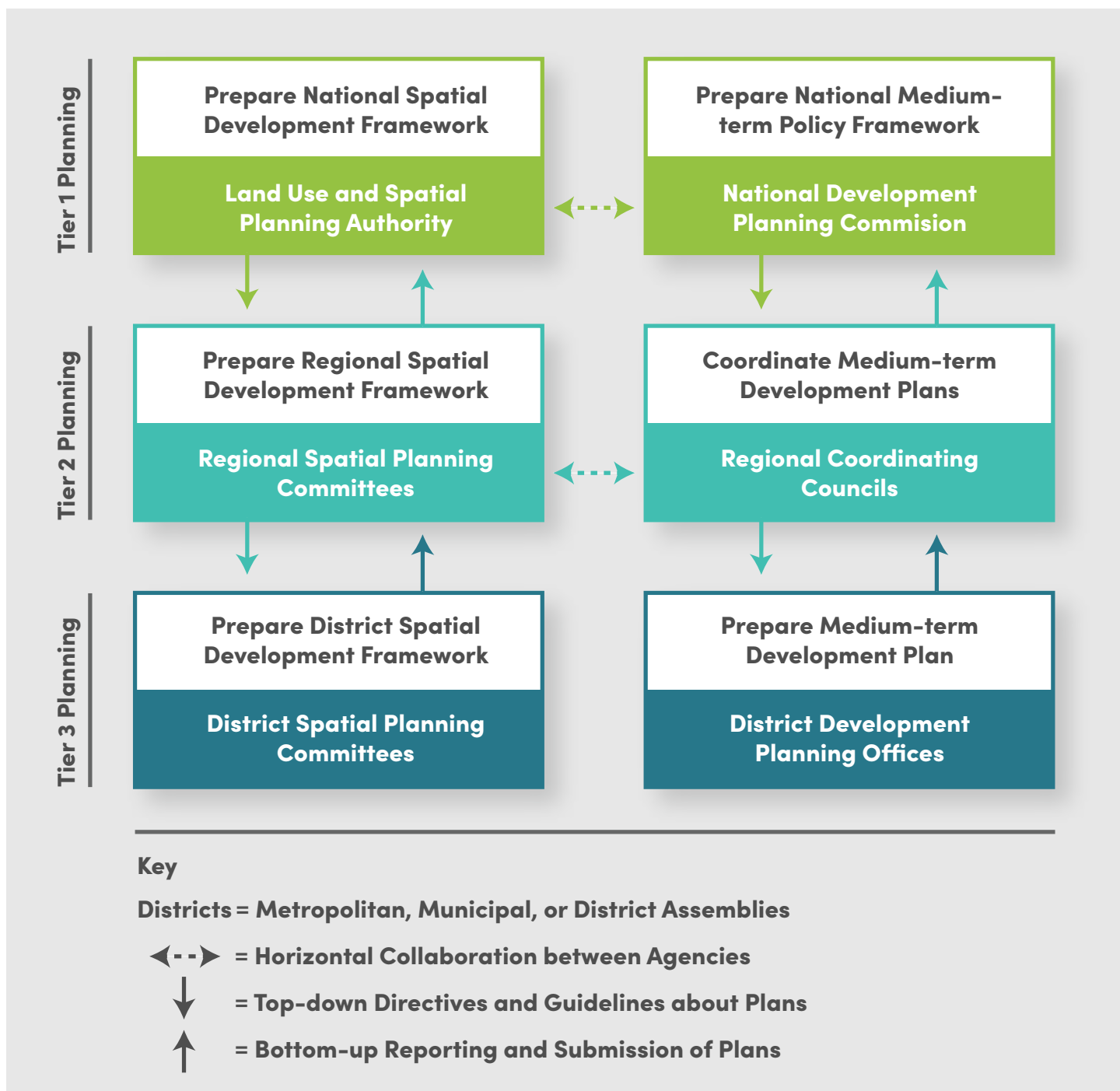
MMDAs are designated based on their populations: the metropolitan areas such as AMA (urban areas with more than 250,000 population), the municipal areas (towns with population of 95,000 or more), and the districts (rural and small towns). For these MMDAs, the suffix "assembly" is added, such as Accra Metropolitan Assembly, to differentiate the governing authority from its geographic area (Accra Metropolitan Area). The Accra Metropolitan Assembly, hereinafter referred to as the Assembly in this report, is headed by the Metropolitan Chief Executive (MCE), or mayor. The president appoints the mayor (with approval from two-thirds of assembly members present

and voting) and 30 percent of the assembly members. The Assembly currently comprises 72 communities and 76 electoral areas: 76 elected members, 40 appointed members of the assembly, and 13 members of parliament (MPs), but the MPs have no voting rights in the assembly. The Assembly's deliberative and legislative functions are performed by the General Assembly under the leadership of the Presiding Member (i.e., speaker of the assembly). The Assembly is further divided into ten sub-metropolitan councils (sub-metros), each consisting of 25–30 elected members of the assembly. The sub-metros perform functions delegated to them by the assembly. There are 16 departments that report to the metropolitan coordinating director, who ultimately reports to the mayor. Planning and policy functions within the Assembly are divided into policy or development and spatial planning (Figure 4.13). Policy planning, performed by the Metropolitan Planning Department (MPD), coordinates sectoral programs, goals, and priorities prepared by the 16 departments within the assembly. The National Development Planning Commission (NDPC), the central (first-tier) government agency, develops policy guidelines for all MMDAs to prepare four-year medium-term development plans (MTDPs). The central government uses this plan to disburse annual budgetary allocations or the District Assembly Common Fund (DACF) to the MMDAs. Spatial planning, under the recently promulgated Land Use and Spatial Planning Act (Act 925), focuses on land use, zoning, and development control. The Assembly's Town and Country Planning

Department performs this function in accordance with the regional and national spatial development frameworks prepared, respectively, by the Regional Spatial Planning Committee for Greater Accra Region and the national Land Use and Spatial Planning Authority (LUSPA).

^{xxxviii} A referendum on December 2018 increased the number of administrative regions from 10 to 16.

Figure 4.13 Spatial and development (policy) planning systems in Ghana



Policy initiatives

Ghana's Urban Policy Framework and Action Plan seeks to ensure rural-urban linkages to promote agro-based industries and to improve food hygiene and quality for the urban public.²⁷¹ The Accra Metropolitan Assembly collaborates with national government and private agencies to implement food initiatives within the Accra Metropolitan Area. The Assembly's local initiatives receive funding from the District Assembly Common Fund if they conform to the AMA's medium-term development plan (MTDP). Public-private initiatives are mostly funded by private organizations (e.g., nonprofit organizations and international donor agencies).

Some of the local food initiatives discussed below are aligned with the recently completed national development policy, Ghana Shared Growth and Development Agenda (GSGDA II), and the national agricultural policy, Food and Agriculture Sector Development Policy (FASDEP II). An overall national development policy (Coordinated Programme of Economic and Social Development Policies (CPESDP 2017–2024) and a national agricultural policy (Planting for Food and Jobs (PFJ 2017–2024) have replaced these policies. Both the previous and current national agricultural policies were designed to meet the pillars of the broader Comprehensive Africa Agriculture Development Programme (CAADP) compact.²⁷² Thus, the local initiatives detailed in this case study reside within a nested set of national (e.g., FASDEP II, or PFJ)

and supranational (CAADP) policies. The recently launched Greater Accra Spatial Development Framework (GASDF) also aims to conserve agricultural lands to ensure food security through initiatives such as urban food sheds.²⁷³

Farmer Field School (FFS) project.

In the aftermath of the June 3, 2015 flood disaster, the Assembly has been collaborating with the Ministry of Food and Agriculture (MoFA) and Food and Agriculture Organization of the United Nations (FAO) to demonstrate climate-smart crop approaches to farmers. In this initiative, farmers observe and compare two nursery beds over an entire cropping season, under the guidance of a facilitator. Farmers build one nursery bed using conventional farming practices (seed broadcasting, mulching, non-use of nursery net, and use of immature compost), and also build an experimental, or FFS nursery bed, using “best practices” (planting seeds in drills, use of nursery nets, use of mature compost, mulching). Farmers compare the results from the two beds each week and finally at the end of the cropping season. As of 2017, the farmers who benefited from the FFS initiative included 27 farmers cultivating lettuce at Korle Bu and 35 farmers cultivating sweet pepper and tomato at Dzorwulu and Legon.²⁶⁶

Food safety and market sanitation.

The Assembly, in collaboration with the Women in Agricultural Development (WIAD) directorate under MoFA and the Ghana Food and Drugs Authority, is educating market women, traders, butchers, and food vendors on the proper handling of food. As of 2016, trainings have been

offered on meat hygiene, wearing protective clothing, health hazards associated with unsanitary markets, selling adulterated and rotten foods, and effective use of (exotic) vegetables in cooking. To further address sanitation in the farmers' markets, the Assembly entered into public-private partnership agreements to reconstruct some of its markets: Mallam Atta Market, Makola Market, Mallam Market, PWD/Kwasiadwaso Market, Kantamanto Market, Salaga Market, Tuesday Market, and London Market. Studies on street food safety and hygiene in Accra (and Kumasi) reveal that more local and national initiatives on (street) food safety (e.g., bylaws, regulations, strategies) are needed, including integrating food safety and hygiene into the Assembly's urban development plans.²⁷⁴

Home gardening. The Accra Metropolitan Assembly, in partnership with MoFA, aims to ensure greater food security by promoting home gardening through distributing free seeds, and organizing home gardening workshops for interested households in the AMA.²⁷⁵ In 2016, around 16 home gardens were established in areas such as Legon, Mamobi, Dansoman, Abossey Okai, Lartebiokorshie, and Osu. The crops cultivated include maize, cowpea, tomatoes, yams, cassava, okra, garden eggs, sweet potatoes, shure, groundnuts, plantain, lettuce, noni, green pepper, cocoyam, mushroom, moringa, and so forth.²⁷⁵ As the AMA rapidly urbanizes, local government officials and farmers see home gardening as a potent remedy for the increasing scarcity of farmland in the AMA.^{276–280}

Technology demonstration and transfer.

In 2016, the Accra Metropolitan Assembly and MoFA trained around 403 farmers in use of new technology to reduce post-harvest losses and engage the farmers in alternative livelihoods. These trainings included planting and seed multiplication techniques, pest and disease recognition, prevention and control, techniques in the use of improved crop varieties, mushroom production techniques, irrigation techniques, and appropriate use of agro-chemicals. Training women in agro-processing techniques is also integral to this technology transfer initiative. The Assembly and MoFA have trained women in the farmers' markets (e.g., Makola farmer market) on how to process soybeans into soya khebab, milk, and chunks. There is also a partnership between MoFA and private digital platform operators, such as Esoko, to gather data on farmers (demographic, economic, farm characteristics and practices, etc.) to help inform food policy and program design.

Fertilizer and seed subsidies to farmers.

Previous governments have pursued national fertilizer and seed subsidy programs, and the current government is pursuing this as part of its PFJ policy.²⁸¹ The Assembly, like other MMDAs, works with MoFA to implement these subsidy programs at the local level by distributing fertilizer and seeds directly to the farmers at reduced prices and/or distributing subsidy coupons to farmers, which they use to purchase fertilizer and seeds at reduced prices from retailers. FAO, in collaboration with the Assembly distributed lettuce, cabbage, tomatoes, cucumber, green pepper, and hot pepper seeds to



Backyard garden in Accra

farmers who were affected by the June 3, 2015 flood disaster in the AMA. In general, the implementation of fertilizer and seed subsidy programs is fraught with multiple challenges, from both farmers' and policymakers' perspectives.

From seed to table (FSiT). With support from the RUAF-Cities Farming for the Future (CFF) program, the International Water Management Institute in Ghana (IWMI-Ghana) worked on the FSiT initiative (2009–2011) to facilitate local food policymaking and financial

support for smallholder farmers. They provided training to urban smallholder farmers (in creation and marketing of value added products, food safety, and risk-minimization in wastewater use for irrigation, etc.), helped farmer groups to acquire new land and obtain loans from private financial agencies, and revised the Accra Metropolitan Assembly's bylaws on crop watering and irrigation to meet the World Health Organization's guidelines. Prior to the FSiT, IWMI-Ghana established the Accra Working Group on urban and peri-urban Agriculture



Storm drains used for irrigation

(AWGUPA) in 2005, which was a multi-stakeholder platform involving the AMA, MoFA, and other government agencies and nonprofit organizations to enhance urban food security and sustainable urban farming. Through the AWGUPA, the Accra City Strategic Agenda on urban and peri-urban agriculture was developed, and for the first time, in 2006 the National Best Farmer award included a new category, the Best Urban and Peri-Urban Farmer.²⁸²



Farm destroyed by flooding

Challenges and lessons

The government is currently less hostile to local food initiatives in urban areas. However, many initiatives depend on external donor support and are constrained by persistent challenges within the AMA's foodscape.

Accra's water paradox: Too much and too little water for farming. Farmers in Accra face numerous challenges in sustaining high production yields. While many of these challenges are structural, they are also environmental. Studies of Accra have discussed water scarcity and poor water quality. A policy official interviewed for this case study reported that he once observed farmers at Korle Bu watering their crops from the open drains carrying wastewater from the Korle Bu Hospital and domestic sewage from nearby houses.²⁸⁰ In addition, farmers frequently referenced flooding as a barrier to crop survival and higher revenue generation. For example, one farmer from Okponglo explained that the greatest challenge he faced in the previous year was extreme weather conditions: "I was just at the mercy of the weather. The weather conditions are unpredictable currently as compared to the last five years. When the rains came, they were too heavy and prolonged."²⁶⁷ Others also explained that as a result of too much heat and too much water from flooding, they observed their vegetables getting "cooked" on the farm.^{268, 283, 284} As farmers battle heavy rains, extreme heat, and adjust farming practices to accommodate too much water, they also adapt their practices to survive when there is not enough rain.

Food systems planning and policy dilemmas. Two overlapping dilemmas plague Accra's food systems planning and policy. First, the Accra Metropolitan Assembly formulates comprehensive local food initiatives, but DACF funding is not enough for comprehensive implementation. Hence, local food initiatives are skewed toward addressing certain "fundable" food issues while excluding others. For instance, speaking about the national fertilizer subsidy program, which must be implemented locally as part of the current national food policy (PFJ), an agricultural extension officer asked, "What's the point of fertilizer subsidy if farmers' crops are destroyed by rainfall or pesticides?"²⁸⁵ When this issue was brought up during an interview with one of the advocates of the PFJ, he stated that fertilizer subsidy is just one component of the comprehensive food solutions contained in the PFJ.²⁸⁶ However, farmers are not affected by how comprehensive the solutions are in theory; they are affected by how comprehensive the solutions are in practice. Regardless of a food policy's comprehensiveness on paper, implementation matters.

This reveals the second dilemma: pseudo bottom-up food systems planning. Even though local initiatives are formulated and implemented at the local level, they must always fit the national development agenda (i.e., CPESDP) and national food policy (PFJ). As one local planning director noted, "We seem to be practicing bottom-up planning, but we feel as though we are going through a process to come up with ideas that only checks off NDPC's boxes."²⁸⁷ Perhaps

implementing the PFJ does not mean that all MMDAs should implement a national subsidy program. MMDAs such as Accra can be allowed to implement different aspects of the comprehensive solutions in the PFJ based on the metropolitan area's peculiar food system context (e.g., farmers having issues with too much or too little water).

Planning failure in land access for farming. Many studies discuss the challenge of farmers' access to land in the AMA. However, one of MoFA's directors expressed the insightful opinion that it is not entirely correct to say that no land for farming exists in Accra.²⁸⁸ Rather, the issue is that the AMA is poorly planned, such that pieces of land are scattered haphazardly throughout the AMA. The policy and planning director at the Ministry of Inner City and Zongo Development, who is also a farmer and formerly worked at the national head office of the Town and Country Planning Department, also echoed this view.²⁸⁰ In an interview with the authors, he mentioned that the nearby "Asomdwee Park," which was where the late president John Evans Atta Mills was buried six years ago, is now vast, abandoned, and used as a hub for prostitution, but it could have been designed as a space for farming. Some of the interviewed stakeholders stated that even though farmlands face stiff competition from residential and commercial land uses, farmers' lack of access to land in the AMA manifests a planning failure to imagine the city as a productive food space.^{280, 282, 285, 288} Apart from considering horizontal farming (i.e., converting pieces of scattered land parcels into productive farmlands), the Assembly's spatial



Farm area under high tension pylons

plans and regulations could have also considered non-traditional farming sites such as rooftops. In the absence of planned farming areas in the AMA, farmers try to find vacant land parcels, including government lands (e.g., land parcels at the Korle Bu Hospital and under high-voltage pylons) and private lands yet to be developed. Farmers interviewed at Korle Bu mentioned that they enjoy secure land tenure because the hospital's staff and management enjoy buying fresh vegetables directly from the farms.^{270, 276} Those farming under the high-voltage pylons also said they feel relatively secure on the land because Ghana

Grid Company Limited (GRIDCo), which owns these lands, prefers that these lands be used for farming. Due to these farming activities, GRIDCo now does not have to worry about clearing weeds under the pylons during routine maintenance and/or demolishing permanent structures under the pylons.

Lack of capital: Smallholder farmers are not perceived to be financially attractive. The lending environment does not seem friendly to smallholder farmers in the AMA. Some farmers reported having learned from other farmers' experiences that lending agencies often deny farmers' loan

applications because their activities are considered too small and not sufficiently profitable.^{268, 269, 283, 284} The lack of collateral, inconsistent cash flow, and/or insecure land tenure add to this challenge. Furthermore, most farmers save less than 5 percent of their income, which makes it almost impossible for them to build the needed capital to operate and expand their farms. Some farmers secure so-called interest-free loans from their aggregators, market women, etc. They repay loans by allowing their buyers to harvest crops, and sometimes the quantity of harvest is negotiated ahead of time. Interest-free lending is not entirely a

business proposition; it is a religious proposition as well. As noted, many farmers in the AMA are Muslims whose faith disallows paying or charging interest on loans. However, many realize that the loans they borrow may come with an economic penalty because lenders often over-harvest farmers' crops as repayment for the loans.

Opportunities for future transformation

AMA's foodscape stretches across the urban, peri-urban and rural zones. The variation in agriculture across these zones, and the opportunities to link farming to markets within these zones offer considerable opportunity for transformation. Urban and regional planners are familiar with the idea of transect, or corridor, when planning across landscapes. Extending the transect idea to the world of food systems planning, Accra offers considerable opportunity for developing a food transect (FT), or corridor of food systems activities linked across the urban, peri-urban, and rural areas of the region.²⁸⁹ Below are a list of ideas that may help to foster a food transect in the AMA.

Establish a network of urban land trusts for farming (ULTF) in the AMA. As noted earlier, Ghana's Urban Policy Framework and Action Plan and the Greater Accra Spatial Development Framework call for strengthening rural-urban linkages, promoting agro-based industries, and conserving agricultural lands. A potential first step to achieving these aims is to map the scattered vacant and "abandoned" lands in the AMA and identify those suitable for farming based on parameters

(e.g., water access, soil types, etc.). Second, through private-public partnerships, land can be acquired from landowners and made available to urban farmers using a number of alternative models, including leasing (for a fee), through a community land trust (CLT), or a land bank. The idea of land banks emerged in several interviews with stakeholders, including the Assembly's former Metropolitan Agricultural Development Department director.^{280, 285, 286}

Exploring these options would require developing an approach to fairly compensate landowners to avoid future encroachment on urban lands for farming. Lessons can be learned from the network of irrigated lands managed by the Ghana Irrigation Development Authority in peri-urban and rural parts of the Greater Accra Region (e.g., Ashaiman, and Weija).²⁹⁰ First, compensation for ULTF lands owned by Accra's traditional authorities (chieftaincy, clan, and family lands) should adopt an *intergenerational amortization approach*: rather than paying a lump sum to the current chief or clan/family leader, farmers who occupy the lands within AMA's ULTF could pay fixed yearly or seasonal payments over an agreed time period. Finally, lands within the ULTF should be clearly demarcated and codified in the Assembly's zoning regulations, bylaws, MTDP, and the GADF. The ULTF can be detailed and implemented in discussions with policy and community stakeholders.

Private-sector and technology-led urban nucleus food program (UNFP). There is enormous opportunity to build on existing

A partnership between the Alliance for a Green Revolution in Africa (AGRA), a nonprofit organization, and Esoko Ghana Limited, a for-profit organization, aims to develop a nucleus program for farmers. This program will focus on providing a one-stop-shop for smallholder farmers, with the nucleus comprising of farmers, aggregators, extension officers, traders, and lending institutions. Already, Esoko, in collaboration with Ministry of Food and Agriculture (MoFA), has developed an e-extension platform to provide information (e.g., climate, fertilizer use, etc.) to farmers, and its other platforms also house information about farmers, farming practices, productivity, aggregators, commodity prices, and so forth.



Representative of Esoko, an information and communication technology firm, gathers data on food in the market as part of its Digital Farmer Services

innovations to transform the food infrastructure in the AMA. For instance, having secured lands for urban farming through an urban land trust, farmers operating within the network of ULTF can represent an urban nucleus food program (UNFP). The UNFP will consist of registered farmers who have access to their own financial lending institution(s), extension officer(s), irrigation system, aggregator(s), trader(s), and so forth.

A digital platform for individual UNFPs can be used to collect socioeconomic information on farmers, aggregators, traders, farming practices, crop yield, hygiene practices, tracking of crop contamination levels and final destination markets, farm prices and market prices for crops, seasonal

demand for different crops, and so forth. The platform can also be used to disseminate information to farmers on climate conditions, pests and diseases, tips on fertilizer application, and so forth. Food planning and policies can also use data on each UNFP to support decisions about each individual and the entire UNFP and how such decisions impact and are impacted by the peri-urban and rural zones in the Greater Accra region. In other words, the UNFP has the potential to bring together discrete local food initiatives implemented by public and private organizations and public-private partnerships.

Piloting, phasing, and exit strategies. Planning and policy interventions to transform AMA's foodscape require (1) learning how to pilot intervention

strategies and (2) providing clear exit strategies when interventions involve public-private partnerships. On paper, the Comprehensive Africa Agriculture Development Programme (CAADP) and Planting for Food and Jobs (PFJ) present innovative policy directions to transform Accra's food infrastructure. However, as noted earlier, the seemingly top-down planning and policymaking process limits the Assembly's ability to choose specific national and supranational initiatives that fit their local contexts. Piloting various aspects of a comprehensive food policy (e.g., PFJ) within different local government jurisdictions based on specific contextual factors offers avenues for social experimentation and learning, before policies are rolled out. This also allows the Assembly and MoFA to know when to commit District Assembly Common Fund (DACF) resources to particular initiatives, rather than implementing a one-size-fits-all initiative (e.g., national fertilizer subsidy program) in the entire AMA. The potential urban land trust or urban nucleus food program could be piloted in a phased manner to experiment and learn lessons. Finally, public-private local food initiatives in the AMA are often unsustainable because many do not have clear exit strategies for the private entities involved. A case in point is the now-defunct AWGUPA, which was very successful but could not be continued by the Assembly and MoFA after funding from the RUAF Foundation ceased. Future transformative food initiatives in the AMA will require technical and financial support from the private



Woman selling food in the market, Accra

sector. However, clear guidelines are needed on (1) the type and level of private-sector support needed at the beginning of a local food initiative, (2) how long such support will last, and (3) clear and verifiable commitment strategies from the public entity (e.g., the Accra Metropolitan Assembly or MoFA) to continue the initiative when private support ceases.

In summary, the Accra Metropolitan Area has a considerable number of

opportunities that can serve as the basis of an innovative, equitable, and sustainable food system. Engagement and leadership by local government actors, especially in addressing land tenure for farmers, can accelerate the creation of an improved food system.

5

A close-up photograph of a hand holding a green leaf. The hand is positioned on the left side of the frame, with the thumb and index finger visible. The leaf is held between the fingers, showing its veins. The background is a soft-focus view of other green leaves and branches, creating a natural, organic feel. The overall color palette is dominated by various shades of green and brown.

OPPORTUNITY-INNOVATION-EQUITY FOOD SYSTEMS PLANNING FRAMEWORK

OPPORTUNITY-INNOVATION-EQUITY FOOD SYSTEMS PLANNING FRAMEWORK

The experiences of communities in LMICs suggest the need for a context-sensitive, locally-informed planning process and methodology. Although a great deal of literature and policy and planning experience are available from across the globe, little fits the context, experiences, opportunities, and challenges of communities in LMICs. Moreover, the experiences of local governments are unique and driven, in many cases, by strong central government regimes. To that end, it is difficult and perhaps foolhardy to propose a prescriptive approach to food systems planning at the local or regional government levels. Instead, we offer a broad framework for the planning process that local and regional governments could adapt for their own communities.

This broad approach to food systems planning, which we call the Opportunity-Innovation-Equity (OIE) framework, aims to build on existing strengths in a community, propel innovation, and ensure that the well-being of those at the margins of society are protected. In this section, we suggest that good food systems planning emanating from an OIE framework has certain traits or elements as illustrated in Figure 5.1. Additionally, the OIE framework requires that local governments and their partners

pay purposeful attention to the methodological steps or process by which to improve their food system. We outline these steps in Figure 5.2.

Elements of good food systems planning

Although food systems planning is a relatively new field of planning, many local governments around the world have experimented with planning and implementation tools that strengthen food systems. For instance, the Growing Food Connections (GFC) initiative reports that hundreds of local governments in the United States have adopted plans and policies to strengthen food systems. GFC has also identified nearly a dozen Communities of Innovation (COIs) within the United States that are especially noteworthy in their attempts to use local government planning and policy to connect small and medium-scale growers with food insecure consumers. Many of these good food systems planning efforts share some characteristics.

Good food systems planning: 1) builds on existing opportunities; 2) ensures inclusion, equity, and justice; 3) is forward looking, 4) amplifies innovation; 5) relies on evidence; 6) recognizes the spatial nature of food systems; 7) uses a

Figure 5.1
Ten elements of good food systems planning



systematic approach; 8) protects the public interest; 9) is action driven, and, importantly; 10) emphasizes monitoring, evaluation, and course correction (Figure 5.1). We explain each element below.

All communities offer some sort of *opportunity* vis-à-vis the food system. These opportunities range widely, as illustrated in the districts of Khordha and Thiruvananthapuram in India, in the parish of Clarendon in Jamaica, and the Accra Metropolitan Area in Ghana. Some have natural resources, while others may be technology hubs or be located in close proximity to markets. Some communities are more adept than others at building on available opportunities. The key to a good food systems planning process is for each community to identify opportunities *within* and *linked* to its food system and to build on these opportunities.

Good food systems planning incorporates processes that are *inclusive, equitable, and just* to ensure that those who are marginalized within or by the food system have the opportunity, means, power, and capacity to redress the situation. To be inclusive, marginalized voices must co-lead a planning process. Experience from Growing Food Connections suggests that strong community partnerships led by diverse stakeholders are central to creating innovative food systems plans.²⁹¹ An inclusive, equitable, and just process ensures the clarification of whose interests are protected and advanced within the food system. In other words, good food systems planning is as much

about the *process* of planning as about the plan document itself.

Good food systems planning is *forward looking*, or future-oriented: it imagines a better future for current and future generations. In such a process, communities outline the characteristics of the *future* food system they wish to achieve. In other words, a food systems plan must describe the future vision, goals, and aspirations for a community's food system. These future goals and actions drive the planning process.

A good food systems plan amplifies (rather than dampens) *innovation* and entrepreneurship in the food system. Innovation can emerge from within the community when food systems stakeholders build on opportunities to generate new ideas and strategies that can propel communities toward an agreed-upon set of goals.

A food systems plan marshals *evidence* to inform future actions to strengthen and leverage a community's food system. Food systems plans use a variety of evidence to inform future actions. Evidence may come from primary and/or secondary sources of data. Evidence honors many different ways of knowing, including traditional quantitative and qualitative data as well as the lived experiences of community residents.

A food systems plan is spatial: it attends to the *spatial* links among different sectors and elements of the food system. Activities tied to the food system unfold over space.



Communities of Innovation

Many towns, cities, counties and regional government agencies in the United States are developing and implementing a range of innovative plans, public programs, regulations, laws, financial investments and other policies to strengthen food systems.

Bringing together local food procurement policies, farmland protection ordinances, regional food aggregation and distribution facilities, grocery store financing initiatives, and farmers market double value redemption programs, these Communities of Innovation are using creative strategies to foster linkages between community food production and community food security.

Communities of Innovation in the United States include the cities of Baltimore (Maryland), Burlington (Vermont), Cleveland (Ohio), Lawrence (Kansas), Philadelphia (Pennsylvania), and Seattle (Washington).

Food systems planning expert Kimberley Hodgson, who co-led Growing Food Connections and studied COIs in the US, points to the power of partnerships as crucial to developing innovative food systems plans and policies.

For more information on Communities of Innovation visit: <http://growingfoodconnections.org/research/communities-of-innovation/>

Indeed, the flow of food, from farm to plate, happens over space. Farming may occur in one part of a city-region; markets may be laid out in particular locations; homes may be located in particular places in relationship to food sources; and transportation routes may be laid out in particular ways to link (or de-link) various food system activities. Understanding the spatial and locational nature of the flow of food over space can strengthen material and non-material relationships, efficiencies, and outcomes in the food system.

A food systems plan is *systemic* in that individual sectors of food systems are aligned to amplify the work of the whole system (Figure 5.2). A food systems plan is different from an agriculture (or an anti-hunger) plan because it attends to the ways in which agricultural activities (or anti-hunger action) are linked to other sectors of the food system. A good food system plan also links with other *systems* in a community, such as economic, transportation, public health, and environmental systems.

A good food systems plan views the food system both as a space within which the *public interest* is protected and a lever for protecting the public interest. Although food systems serve various interests across the public, civil, and private sectors, food systems plans prepared by or in partnership with local governments must primarily aim to enhance people's well-being in a community. Following an inclusive planning *process* is more likely to ensure

protection and promotion of the public interest.

A good food systems plan clearly outlines *action*, with clear timelines, budgets, and actors responsible for implementation of the plan.

Finally, there is no perfect or error-free planning process. Therefore, the best food systems planning processes account for *reflection, monitoring, evaluation, and course correction* to propel communities toward their preferred outcomes. New evidence generated through monitoring and evaluation process allow for greater accountability in the planning process.

Planning process for the Opportunity-Innovation-Equity (OIE) Framework

Undertaking planning activities is a familiar task for planners who work on behalf of local governments. Yet, planning for food systems can appear daunting to a novice local government. To that end, we detail the process for preparing a *formal* community food systems plan within a local government jurisdiction. We use the term “formal” rather than “official” plan to allow for flexibility in the context within which local governments prepare plans. Not all local governments have the statutory authority to launch an *official* planning process, but all local governments have the ability and motivation to launch *formal* planning processes in partnership with their community stakeholders. The planning approach outlined

in this section draws on the lessons learned from case examples in LMICs and from examples of communities that have prepared and implemented food systems plans and policies.

We describe nine broad steps that local governments and their community partners in LMICs can adapt:

Step 1	Build and nurture partnerships and governance structures.
Step 2	Scope the food systems planning process.
Step 3	Set the table for the food systems planning process.
Step 4	Envision the future and determine goals and objectives for the community's food system.
Step 5	Assess and analyze baseline conditions in the community food system.
Step 6	Identify opportunities for change.
Step 7	Propose and vet ideas for the future, and publish plan.
Step 8	Implement ideas.
Step 9	Monitor, evaluate, reflect, and correct the course of action.

Although we discuss the above nine steps in a somewhat linear manner, communities do not (necessarily) follow such a linear pattern (Figure 5.2). The nine steps are cyclical and iterative.

Step 1. Build and nurture partnerships and governance structures

Communities' food systems work because of a network of relationships and partnerships among a diverse set of actors. As the case studies illustrate, smallholder farmers, retailers, processors, etc., are central to making food systems work in communities. Therefore, efforts

to plan, strengthen, transform, or leverage a community's food system for broader well-being cannot move forward without the continual task of nurturing existing and new relationships with *and* among food systems stakeholders in communities. In the absence of inclusive relationship building, smallholder farmers, in particular, can suffer from some of the greatest social and economic losses.²⁹² In turn, the exclusion of smallholder farmers from planning and policymaking

processes is more likely to overlook opportunities that already exist in communities.

Local governments and their representatives, such as planners and other officials, can set the stage by learning about food systems partners within their jurisdictions, building new relationships, and continually nurturing these relationships. These partners include farmers who grow within their local government jurisdictions; traders (or,

Figure 5.2 Steps in the planning process for the OIE Framework



Build and nurture



aggregators) who buy from farms and transport produce to markets; food processing companies; companies that manage food-related waste; and civic society advocates who work on issues of hunger, health, and social justice.

Likewise, community food systems (CFS) actors and advocates must become familiar with the structure, functions, and processes of local governments. CFS actors must also be willing and prepared to engage in planning/policy processes that strengthen and leverage food systems. Relationship-building between the local government and food systems stakeholders must *precede* any efforts to determine the scope and partners of a formal food systems planning process.

The effort to build and sustain relationships requires a governance structure or arrangement through which local governments and food systems stakeholders share appropriate responsibilities and information. Creation of such a

governance structure also allows the creation and implementation of a more meaningful planning process.

Many different entities and agencies on behalf of local governments can lead the responsibility for launching and sustaining relationships with food systems stakeholders. The decision is best made in the context of a particular country (many local governments have no staff members who are responsible for addressing food systems). In some local governments, the department responsible for planning activities could be the liaison for these relationships. In others, it could be the agency responsible for the provision of social services or of public health services. In short, many different agencies within local governments can lead on behalf of the government.

At a minimum, local governments can identify a liaison who is responsible for interacting and working in collaboration with community food systems stakeholders. The local government liaison can work with civic and private entities engaged in food systems development. When such community groups do not exist, the local government liaison can help to convene a food systems advisory group, sometimes called a food policy council, within their jurisdiction.³³

Global examples abound of local governments that have established local governance structures. The cities of Buenos Aires, Argentina and Belo Horizonte, Brazil both have established governance

structures that convene public agencies across the food system.^{76, 293} In Clarendon, Jamaica, the local (parish) government has assigned the local economic development officer to be a liaison for food systems development initiatives. Similarly, the Social Development Commission in Clarendon convenes citizen groups to address social issues (including food-related issues).

Nurturing diverse and inclusive partnerships and governance structures is more likely to allow a community to identify opportunities within its food system, propel forward with innovation, and result in equitable outcomes for marginalized groups.

Step 2. Scope the food systems planning process

Working with community food systems stakeholders from across the private and civic sectors, local governments and their partners can determine the scope of their food systems planning process. The scoping stage is crucial for determining the direction of the plan, since the planning process can be time- and resource-intensive for local governments and their partners.

If a local government has never previously embarked on a food systems planning process, it is better to begin with a narrower scope (and assessment, Step 5) and to repeat the planning (and assessment) in five- to 15-year cycles, depending on the availability of resources. The first plan (and assessment) often serves as

a pilot for determining what is feasible in a community planning process. A scoping process determines in broad strokes the *opportunities* in a planning process, the innovations that may *already* exist in a community, and the *inequities* that need to be addressed.

The scope of a food system plan can range widely. Some plans can be neighborhood-scale food systems plans, while others can be municipal- or regional-scale plans. Some emphasize all sectors of the food system, while others are strategic in emphasizing particular sectors, such as food growing (e.g., urban agriculture plans) or consumption (e.g. food access plans).

The scoping process also identifies the time horizon of a planning process and the time duration for the plan's implementation. A planning process that takes three years to complete but results in a plan outlining strategies to be accomplished within one year is not logical. Instead, a planning process that takes about one year to complete and outlines actions that can be achieved in five to 15 years is more reasonable. If a community decides to develop a plan that is longer in implementation duration, it is helpful to include an *amendment* process in the plan.

It is also a good idea to align the time horizon for the preparation and implementation of a food systems plan with the time horizon for other planning processes and plans in a jurisdiction.



A scoping process also outlines the geographic (jurisdictional) scope of the planning process. Settling questions about a plan's geographic (jurisdictional) reach is especially important in the scoping process, as local governments have a tightly defined jurisdictional reach.

Note that a local government can choose to scope its food systems plan within a geographic area that is larger or smaller than its jurisdictional reach. Both decisions have different implications for the lead (or initiating) local government. Scoping a food systems plan for an area larger than a local government's jurisdiction requires partnering with other local or regional government agencies, which can be time- and resource-intensive. However, effective food systems planning requires local governments to think within a *regional* context, which, for some local governments, may be outside of their own jurisdictions.

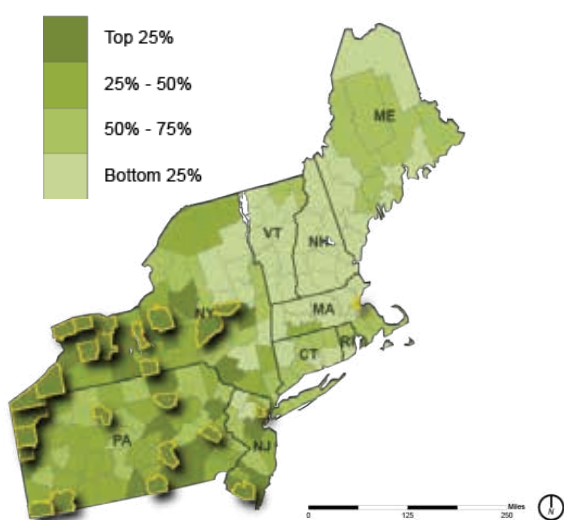
In some cases, governments and their community partners may wish to prepare food system plans

for geographic areas smaller than their jurisdictional reach. For example, a national government may wish to focus on a particular district, a regional (or metropolitan) government may wish to concentrate on smaller areas within a region, or a municipal government may wish to plan for a particular neighborhood in a city. In these cases, governments may wish to use the scoping process to identify **opportunity areas** for planning and implementation. We provide two examples of opportunity areas below.

National example:

Growing Food Connections, a national initiative in the United States, developed a ten-factor index to rank all 3,000 counties in the United States, to identify which counties across the country were primed for change. The initiative then focused food systems planning activities in these *Communities of Opportunity* (COOs). The index included food system supply factors (such as high potential to grow food); demand factors (such as high food insecurity); and where connections among growers and consumers were the weakest (e.g., lowest sale of crops from area farmers to consumers). Ranking was developed by using Geographic Information Systems (GIS) software. Ultimately, one county per region was selected as a COO for enhanced food systems planning activities, by combining the GIS ranking and the qualitative information. Figure 5.3 displays the COO ranking for counties in the northeastern region of the United

Figure 5.3
Communities of Opportunity ranking developed by Growing Food Connections project

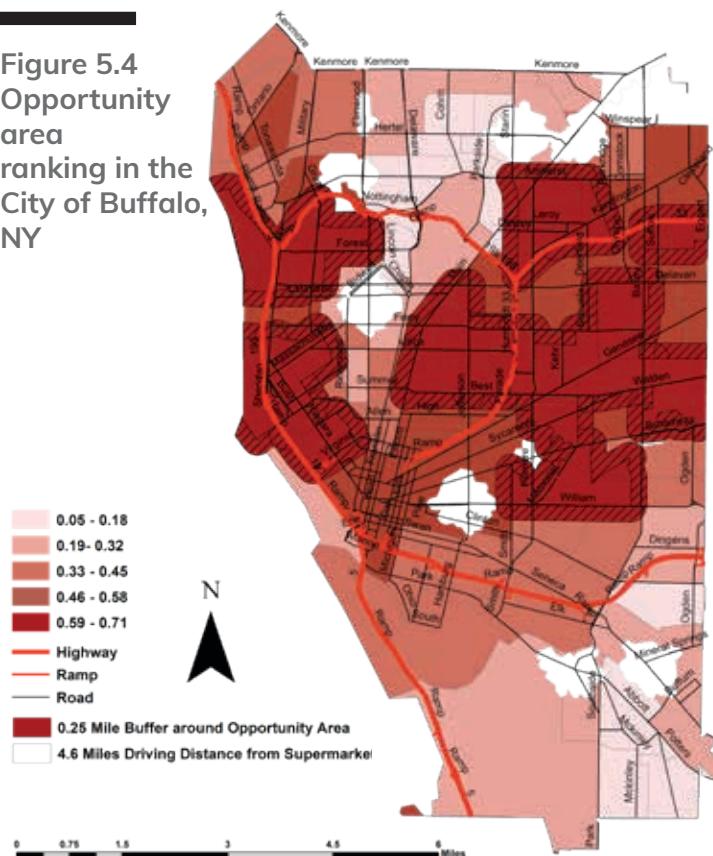


States as well as one selected COO in this region.

City-wide examples:

In the **City of Thiruvananthapuram** (India), local government officials identified the Village of Nanniyode, a sub-area of opportunity *within* the city, where efforts will focus on analyzing and assessing baseline conditions of the community's food system. This first step will facilitate capacity-building among local government officials and stakeholders in Nanniyode and determine the feasibility of a community planning process.

Figure 5.4
Opportunity area ranking in the City of Buffalo, NY



In the **City of Buffalo**, New York (United States of America), a community organization (and funder) worked with an academic partner to identify neighborhoods of opportunity *within* the city where they chose to focus their investment in food systems projects. These areas of opportunity were identified based on income levels (in neighborhoods) and the availability of food retail (Figure 5.4). Projects implemented in these areas of opportunity include expansion of urban farms (including greenhouses), investment in food retail cooperatives, and expansion of an immigrant-centered restaurant incubator.

Finally, a scoping process can also help to identify prior plans in a community so that new plans can build on existing plans and initiatives.



Step 3. Set the table for the food systems planning process

Early on in the food systems planning process, it is useful to delineate the ways in which a local government plans to engage community food systems stakeholders during the process. Effective food systems planning processes are best shepherded by a community advisory group, comprised of food systems stakeholders and spanning the public, civic, and private sectors. They represent multiple interests in a community's food system.

Community advisory groups (CAGs) include farmers, food processors, aggregators, and marketers. Developing CAGs requires ensuring that food-related businesses represent varying scales of operation, especially small- to medium-sized businesses.

CAGs also represent residents' (eaters') interests by ensuring the representation of residents

from various backgrounds. Varied economic classes, gender representation, age ranges, and the inclusion of minority and majority ethnic groups can bring diverse identity perspectives to a CAG. Community advisory groups can also include representatives from other non-food domains such as environment, public health, economic development, anti-poverty advocates, and so forth.

Planning processes steered by a CAG that represents diverse interests and identities are more likely to address local challenges in the food system *and* build on local assets and opportunities.

Local government in **Clarendon**, Jamaica understands how to set the table for a planning process.

Although the parish government does not yet have a food systems plan, the government has engaged in a thoughtful planning process in preparation for their development plan. The *Clarendon Local Sustainable Development Plan* was first introduced in 2005 as a result of collaboration between the Clarendon Parish Council, the Social Development Commission, and the Clarendon Parish Development Committee. Residents, agencies, and other stakeholder groups and organizations were later invited to meetings and workshops to deliver input. Residential engagement began in 2010 through a series of visiting symposiums across the parish.

In **Chautauqua County**, New York, a rural region with a small



Community Group steers a Food Systems Planning Process in Chautauqua County

urban city, a steering committee of public- and private-sector partners served as the CAG to steer a planning process that resulted in the food systems assessment and plan *Cultivating Prosperity: Leveraging the Food System of Chautauqua County as a Catalyst for Economic Development*.²⁹⁴ The CAG for this planning process included stakeholders who represented the local government (e.g., departments of planning and agricultural extension), private-sector actors from the food supply chain (e.g. farmers and food aggregators), and civil society (e.g. public health non-governmental organizations). The CAG has continued to advocate for food systems policy change.



techniques can be used to craft a vision and related goals and objectives for a food system.

Note that the process for establishing the vision, goals, and objectives for a food system plan is not the same as gathering and analyzing evidence (data) about baseline conditions about the food system, a step we discuss next.

Step 4. Envision the future and determine goals and objectives for the community's food system

A key step of the planning process is to discern and articulate the *public's vision* for the food system. Working with the leadership of a CAG, local governments can engage the broader public in the visioning phase of a planning process. During the visioning phase, residents articulate the collective vision, goals, and objectives for their community's food system. The vision, goals, and objectives articulate what a community wants to achieve through its food systems planning process. Vision statements tend to be broad, while objectives tend to be more tightly defined and have measurable benchmarks (Figure 5.5).

Public engagement methods such as charrettes, listening sessions, workshops using traditional arts (e.g., street theater and puppetry), and other culturally inclusive



Buffalo's Food Policy Council training



Step 5. Assess and analyze baseline conditions in the community food system

Once the vision, goals, and objectives for a food system plan are established, it is imperative to document the current (or baseline) conditions of the food system in the jurisdictional area for which the plan is being prepared. Without clear documentation of current (baseline) conditions, challenges, and opportunities, communities and their local governments cannot determine the appropriate actions and strategies for strengthening and leveraging their food systems.

Note that in the context of LMICs, standard data about food systems are more readily available at the national (or state) than at the local levels. Yet, such country- or state-level data overlook the opportunities and challenges at smaller jurisdictional scales and mask the disparities and inequities *within* countries and states. For this reason, the

Figure 5.5 Sample vision, goals, and objectives in a food system plan



assessment methods described here focus on the local, city-regional, and/or regional geographic scales.

At smaller jurisdictional and geographic scales, local governments can play a key role in gathering data during a planning process. Data useful for a food systems assessment include qualitative, quantitative, and spatial data. All three types help to identify the baseline conditions, challenges, and opportunities in a community's food system and inform the choices of action (or inaction)

by local governments and their community partners.

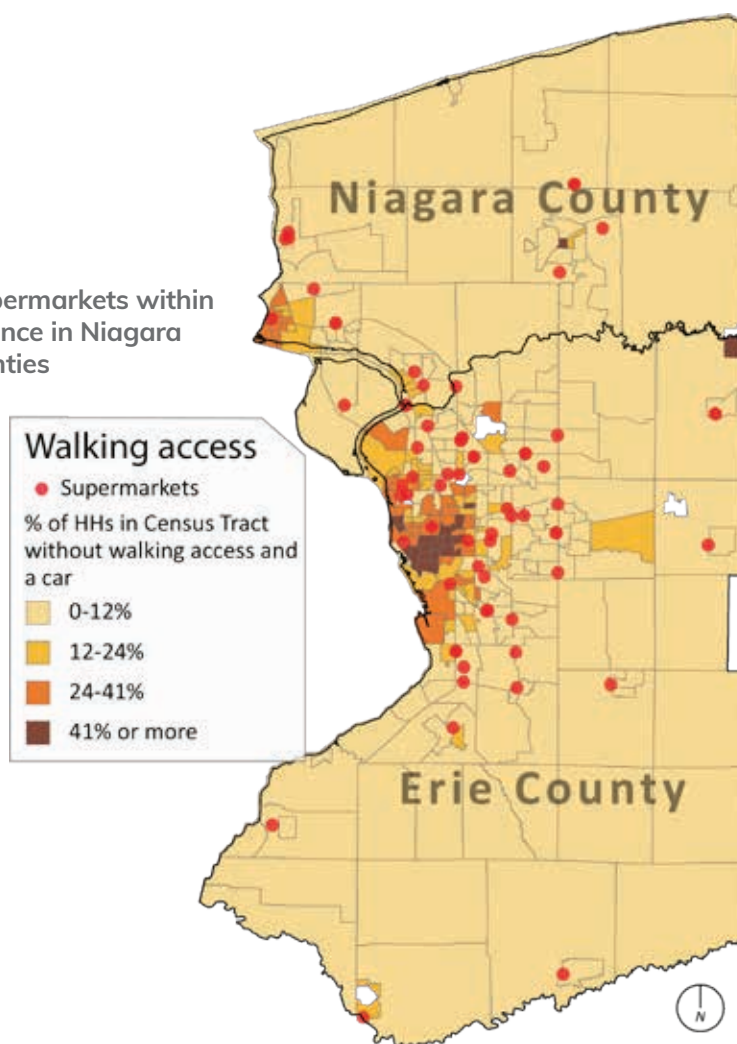
A food systems plan can rely on primary and/or secondary data. A key strength of a food systems plan led and developed by local constituents, including a local government and community partners, is that local constituents can thoroughly detail local conditions (in contrast to national standards).

The key purpose of an assessment is to document how well the food system works for a community. The assessment can be comprehensive, tackling multiple aspects of the food system, or focus narrowly on a few aspects (this is why the scoping for the assessment in Step 2 is important). A comprehensive assessment requires more time and resources. A more targeted assessment can rapidly yield information that allows policymakers and implementers to take action. Fortunately, numerous tool kits and indicators are available for local governments (and their community partners) to identify the aspects of the food system they wish to assess (see new report from RUAF).²⁹⁵

We describe in broad strokes the types of information that local governments may wish to assess as part of their food systems planning process (Table 5.1).

A key starting point for assessing how well a food system works is to understand how residents in a jurisdiction **acquire, prepare, and eat food**, and to assess related health outcomes, such as undernutrition, obesity, and diabetes. This may be assessed through sub-area surveys (or interviews) or through secondary sources of information, if available (Table 5.1). The key issue is to gauge whether residents in the jurisdiction are able to acquire, prepare, and eat sufficient, safe, high-quality, affordable, nutritious, and culturally celebrated foods. In a *systemic* assessment, it is also important to gauge the extent to which these foods come from locally

Figure 5.6
Access to supermarkets within walking distance in Niagara and Erie Counties



grown and processed sources. Some communities, especially in HICs, map the spatial mismatch (or distance) between residents' location and the availability of food sources in a jurisdiction. For example, Figure 5.6 shows the number of grocery stores within walking distance of residents without a car (or other similar means of mobility) in Niagara and Erie Counties in the state of New York. This approach may work in some but not all settings (in many LMICs, informal vendors, markets, and food sources are quite dispersed and within residents' reach). Nonetheless, mapping the time and

distance cost of obtaining food for residents is a key assessment for local governments.

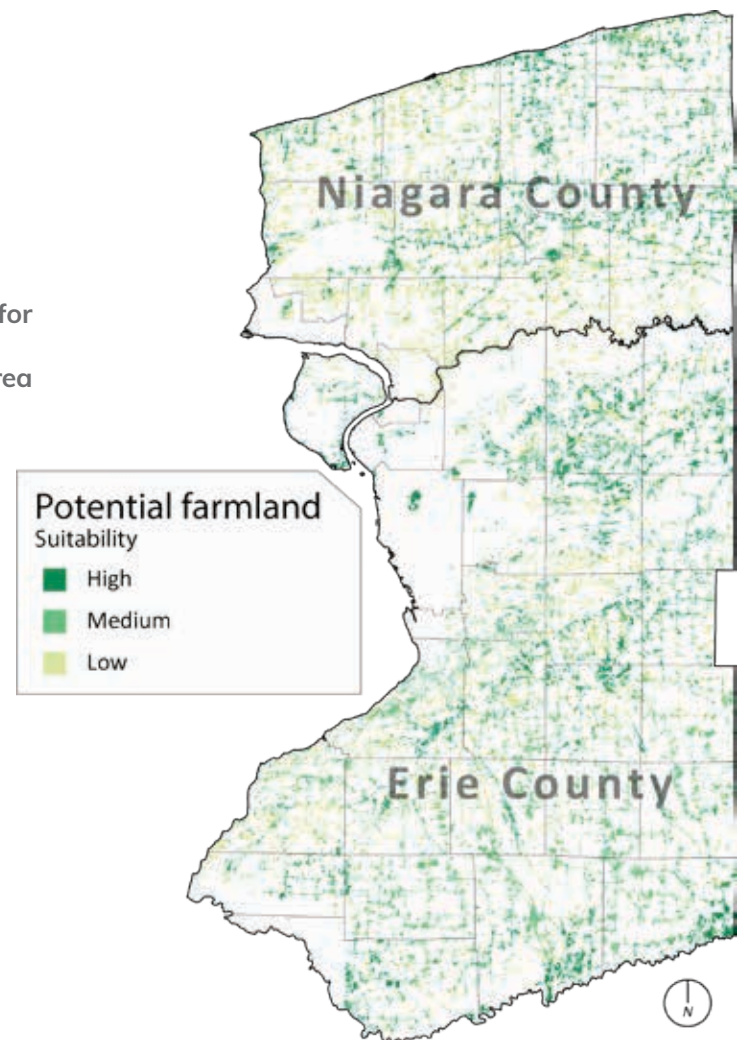
For **food production**, understanding the nature of agriculture, ranching, fishing, gleaned, foraging, and other means of food production within a local government's jurisdiction is key. Most local governments have access to such information through an agricultural census. Assessors can obtain additional information through primary data collection methods such as interviews with farmers. It is crucial to assess the

varied and multi-scalar nature of food production in LMICs, including subsistence, small-scale, and informal activity in the agricultural sector. Documenting the number of owner- and renter-operators, farmworkers, and their challenges is key to rebuilding a city-region's food system.

Finally, using available agricultural census data to map the locations of available farmland, water sources, and soil quality is crucial for determining which lands to protect from development. Such priority area maps can be prepared by using existing Geographic Information Systems (GIS) layers, if available. The map in Figure 5.7, for example, shows land suitable for agriculture in an urbanizing city-region so that planning agencies can deploy policy tools to protect farmland from being developed.

Food aggregation, wholesale, and retail are key parts of a local economy. Data on these entities, which are most likely but not always private businesses, are more likely to be available through the economic census for a jurisdiction. Additional sources of information include offices that issue licenses for, or collect taxes from, businesses to operate within jurisdictions. Offices of local economic development may also be sources of information on food-related aggregators, wholesalers, and retailers. Mapping the locations, markets (local and export), input suppliers, ownership, and labor patterns of these entities can help to reveal the ways in which these important value-added sectors

Figure 5.7
Lands suitable for
agriculture in a
metropolitan area



connect to the food system in a jurisdiction.

Finally, information on **food waste management** is often, but not always, available from the departments of solid waste management. Data on the prevalence of sustainable food waste management practices among households, businesses, and organizations can point to opportunities for recovering and reusing organic resources in a jurisdiction. Additionally, information on food loss at all levels of the food supply chain is

important to document (at farms, aggregators, wholesalers, retailers, and consumers).

Overall, a community food system assessment can range from simple to complex. In many settings, local governments may not have the resources to undertake a comprehensive assessment. In such cases, partnering with area (local) universities and community partners in order to execute the assessment is a strategic step forward.

Table 5.1 Sample measures for a simplified community food assessment

PEOPLE	BASELINE MEASURES (EXAMPLES)	WAYS TO COLLECT DATA (EXAMPLES)	WAYS TO ANALYZE AND REPRESENT DATA (EXAMPLES)
DOMAIN Food, acquisition, preparation and consumption	<p>Number (or %) of food-secure individuals in the planning area;^{xxxix}</p> <p>Dietary intake patterns in the planning area (taking into account nutritional and cultural preferences);</p> <p>Diet-related disease in the planning area;</p> <p>Average/median income/poverty in the planning area;</p> <p>Primary sources of food for consumption (e.g., own backyard gardens, own farm, local farms, local markets, street vendors, etc.);</p> <p>Price of a healthy meal for a median/average household size;</p> <p>Spending on local foods (as a proportion of all food spending);</p> <p>Proximity (or distance) to food sources in the planning area.</p>	<p>Primary data through door-to-door surveys and interviews (this is feasible in small area plans);</p> <p>Market surveys;</p> <p>Data gathered in school settings (about children's access to food);</p> <p>Data gathered in healthcare settings or by public health agencies (or by community health workers);</p> <p>Secondary-source data such as census data (by sub-geographic levels);</p> <p>Geographic Information Systems (GIS) data wherever available, including the following parcel layers: land use, transportation networks, utilities network, population distribution, etc.</p>	<p>Descriptive statistics (comparisons with larger areas such as state or national standards);</p> <p>Summary visuals and infographics;</p> <p>Food flow maps;</p> <p>Food access gap maps;</p> <p>Stories/vignettes from residents of what works for them and what is challenging in the food system.</p>

^{xxxix} Food security refers to a state in which an individual has access to affordable, healthful, and culturally preferred foods.

FOOD SUPPLY CHAIN

DOMAIN

Food production

BASELINE MEASURES (EXAMPLES)

Primary agricultural outputs/
top crops by sale (or volume or
appropriate metric);

Availability, quality, and
price of agricultural inputs
in the planning area (land,
water, amendments, energy,
technology, labor, capital, fertile
soil, and other inputs);

Proportion of farmers using
indigenous and/or sustainable
practices (e.g., seed saving,
rainwater harvesting);

Proportion of agricultural inputs
purchased locally;

Location of farms/farmable land;

Number of jobs in the sector (and
other labor characteristics);

Average/median wages in
sector;

Contribution to local economy;

Connections with other sectors
in the local supply chain (i.e.,
inputs derived locally).

WAYS TO COLLECT DATA (EXAMPLES)

Farmer interviews, surveys, and
focus groups;

Agriculture and economic
census;

Soil and land parcel surveys
and data readily accessible to
local governments (e.g., through
GIS data or remote sensed
data);

Geographic Information
Systems (GIS) layers wherever
available.

WAYS TO ANALYZE AND REPRESENT DATA (EXAMPLES)

Descriptive statistics (with
comparisons with larger areas
such as state or national
standards);

Summary visuals and
infographics;

Maps;

Input-output analyses to show
economic impact of the food
system (in its entirety);

Lorenz curves and GINI
coefficients to show disparities
in access to food resources
within a community;⁹

Stories/vignettes/narrative of
successes and challenges from
food supply chain stakeholders
(e.g., farmers, wholesalers,
processors, retailers, etc.).

DOMAIN

Food processing

Number of small-scale (cottage)
and large-scale food processing
facilities;

Number of jobs (and other labor
characteristics);

Average/median wages in
sector;

Contribution to economy;

Connections with other sectors
in the local supply chain (i.e.,
inputs derived locally).

**FOOD
SUPPLY
CHAIN,
CONT'D.****DOMAIN**
Food
aggregation
and wholesale**BASELINE MEASURES
(EXAMPLES)**

Number of food aggregation and
wholesale facilities (including
formal and informal sectors);

Number of jobs (and other labor
characteristics);

Contribution to economy;

Median/average wages;

Connections with other sectors
in the local supply chain (i.e.,
inputs derived locally).

DOMAIN
Food retail

Number and location of food
retail facilities (including formal
and informal sectors);

Number of jobs (and other labor
characteristics);

Average/median wages;

Contribution to economy;

Connections with other sectors
in the local supply chain (i.e.,
inputs derived locally).

MANAGEMENT OF LOST AND WASTED FOOD

DOMAIN
Reduction,
recovery, and reuse
of loss and waste in
the food system

BASELINE MEASURES (EXAMPLES)

Number, types, and locations of individuals, businesses, or actors providing food waste management services in the community (including formal and informal sectors);

Food lost through the supply chain (in weight or some other metric);

Number (or %) of households and/or businesses composting food-related waste.

WAYS TO COLLECT DATA (EXAMPLES)

Consumer surveys, interviews, and focus groups with food systems stakeholders.

WAYS TO ANALYZE AND REPRESENT DATA (EXAMPLES)

Waste flow diagrams;

Stories/vignettes of success and challenges in food waste management.



Step 6. Identify opportunities for change

Local governments and their partners can review the (baseline) assessment to identify, analyze, and consider ideas and recommendations that build on local opportunities to advance innovation and equity in the food system. Communities can identify strengths, weaknesses, opportunities, and threats in the community's existing food system, and outline future actions that would help the community move toward its goals for the food system.

This step involves modeling, scenario-building, or creative-thinking workshops to help local governments (and their community partners) to think through various pathways forward. For example, given the goals agreed upon by a community (identified in Step 4) and current baseline conditions (assessed in Step 5), local government or partner analysts can develop a scenario for which parcels of land (and how much area) would need

to be protected to ensure higher production of local food (or greater self-sufficiency in the community's food system).

Scenario-building, systems modeling, and evaluating alternative futures can be completed by using various quantitative and qualitative methods and technologies. For example, land use scenarios can be evaluated by using ArcGIS, or, more simply, through a creative problem-solving face-to-face workshop with residents and food systems stakeholders. At the end of this phase, local

governments (and community partners) assemble a curated set of ideas about preferred pathways of actions (including their pros and cons) for strengthening their food system.

Community Dining Program: Mexico City, Mexico

Developed in the wake of the 2008 financial crisis, Mexico City's Community Dining-Rooms Program has received international acclaim for implementing the Right to Food by establishing eating spaces in some of the city's most marginalized communities. The municipal government of Mexico provides a 10 000 peso (518.43 USD) startup grant and training support to establish a kitchen and dining room, which are implemented by civil society organizations. Since 2009, public-civic coalitions have established almost 300 community dining rooms and serve over 33 500 meals daily. One meal plate is sold at 10 pesos, or about 50 cents USD.

The Urban Agriculture Promotion and Regulation Act (UAPRA): Nairobi, Kenya

Prior to the establishment of the UAPRA, Nairobi did not have an Agriculture Department, resulting in many of the municipal bylaws inhibiting farming activities in certain areas of the city. In addition, the Urban Planning Department had not yet incorporated agriculture activities into permissible land use regulations, resulting in conflicts between urban farmers and the local government. In response, the Municipality of Nairobi, with input from civil society and private-sector stakeholders, created the UAPRA to provide a regulatory framework for farming activities in the city. This act has since increased agriculture production for urban farmers, thereby providing residents with greater access to food, and established extension services to increase farmer stability.



Propose

This sets the stage for Step 7, in which specific tools and actions are outlined, reviewed, and finalized. Preferred pathways are identified in close consultation with community actors, including food systems stakeholders.

Step 7. Propose and vet ideas for the future, and publish plan

Although numerous actors within the food system can strengthen the system, here we focus on the actions that a local government can take. The specific action that a local government (and the community) chooses depends on the food system's baseline conditions (Step 5) and the analysis of future pathways (Step 6) for each community. In general, local governments have a vast range of tools that they (and their community partners) can use to strengthen food systems. These tools range from “soft” actions, such as proclamations, to more-firm actions, such as changes in laws and regulations

that strengthen the food system. We outline, as a heuristic, four categories of related ideas that communities can consider to be actions in their food systems plans:

1. New or modified local laws and regulations;
2. New and modified local public programs;
3. New or modified local public investments;
4. New or modified local governance structures.

Examples of laws, public programs, public investments, or governance structures that can result from food systems plans vary widely from community to community. For example, Nairobi, Kenya established a regulatory framework for farming (laws), while Mexico City, Mexico established community-dining facilities (programs). In the Buffalo-Niagara metropolitan area in New York state, a food systems plan recommended the creation of a food policy council, which has since been established by law (governance structure). Additional examples were presented earlier in section 3.

Although there are a growing number of examples from across the globe, the best ideas for strengthening food systems plans draw on local opportunities. Therefore, in an innovative food systems planning process, community food systems stakeholders and/or community advisory groups vet and select the final set of ideas for implementation. Tactics, ideas, and recommendations are developed in detail, along with budgetary implications, as well as roles and responsibilities for *who*

will implement each idea and action. Tactics for implementation can range in priority (high, medium, low), urgency (immediate, medium term, long term), and in financial implications (low, medium, high).

The work completed through the planning process is described in a formal food systems plan, which serves as a document of record for the community. Where appropriate and relevant, a representative local government entity formally adopts, or endorses, the plan.



The Growing Together plan for Buffalo-Niagara

Figure 5.8

Sample timeline for a local government in low- and middle-income countries preparing a food system plan

Idea	Details	Potential Actors	Implementation Time Frame
Idea 26 Develop a database of vacant urban parcels and non-utilized buildings that could be used to expand local food production and processing.	Work with the cities of Buffalo and Niagara Falls, to identify and test the soil on the cities' vacant parcels. Prioritize parcels for remediation, and inform the public which parcels are most suitable for agricultural use.	The Buffalo Erie Niagara Land Improvement Corporation, the Erie County Department of Environment and Planning, the Niagara County Department of Economic Development, the City of Buffalo, the City of Niagara Falls, Cornell Cooperative Extension, the Erie County Department of Health, the Niagara County Department of Health, the Massachusetts Avenue Project, Grassroots Gardens, Greenprint Niagara, the Food Policy Council of Buffalo and Erie County, the Regional Economic Development Council.	Short run (four to seven years).
Idea 27 Protect valuable farmland by establishing purchase and transfer-of-development-rights programs.	Integrate farmland protection and planning for smart growth in municipalities and throughout the region. Finance TDRs with revolving fund accounts used to pay farmers for development rights on their land. The municipalities' or counties' funds are later repaid by developers buying the development rights from the municipalities or counties.	Erie and Niagara Counties, municipal governments (Buffalo and Clarence for pilot program), municipal and county planning organizations, industrial development agencies.	Short run (four to seven years).
Idea 28 Develop and implement a Healthy Corner Store program.	Start a pilot program with five corner stores in areas underserved by healthy food. Provide technical assistance to help store owners market fresh fruits and vegetables, and later provide capital assistance for equipment and store improvements.	The Erie County Department of Health, the Niagara County Department of Health, the Food Policy Council of Buffalo and Erie County.	Short run (four to seven years).

An extract illustrates three of the 38 implementation ideas identified in the Growing Together plan for Buffalo-Niagara metropolitan area along with implementation actors and timeline



Step 8. Implement ideas

Implementation is where planning meets reality. A non-inclusive planning process will likely lead to weak implementation efforts. Because a food system is complex, local governments must work in close partnership with food systems stakeholders to implement a food system plan. A strong plan lays the groundwork for such collaborative implementation. Such a plan outlines clear governance arrangements as well as clear roles and responsibilities for *who* is responsible for overseeing the plan's implementation (and under what statutory authority). The entity charged with *coordinating* the planning process can be (and is) generally different from the entity charged with *implementing* actions identified in a plan.



Step 9. Monitor, evaluate, reflect, and correct course of action

A food systems planning process is an opportunity for local governments and their partners to learn about a community's food system, enact some changes, and learn from the resulting successes and challenges. To engage in planning as a learning process, it is crucial that local governments and allies build into the planning and implementation process a system for monitoring, evaluation, and course correction. Such monitoring, evaluation, and reflection must extend both to outcomes (e.g. increased food security) and the plan implementation process. Like the entire planning and implementation process, monitoring and evaluation can be scaled up or down based on the scoping process. The time and resources required for monitoring and evaluation should be included in the scoping stage of the food systems planning process.



Smallholder Fields in Khordha District

Although the nine steps are described in this section in a sequential manner, the process is often messy, complex, circular, and most certainly requires creativity (along with science). A growing body of research suggests that a failure to think through who is included and excluded in food systems planning processes shapes their outcomes.

Scholars who write about planning processes caution that if planners fail to include, they will plan to exclude.²⁹⁶



6



CONCLUSION



CONCLUSION

Local governments around the world shoulder the responsibility for providing public infrastructure that make places livable for residents. Community food systems are a critical infrastructure for cities and regions, just as important, if not more, as housing, roads, sewers, and other public infrastructure. It is time that local governments – and higher levels of governments – recognize the central role of food systems in community well-being.

Strategies to plan for and strengthen food systems depend very much on the specific context of a city or a region. Every community has unique opportunities and challenges that drive its food system. This report illustrates such opportunities and challenges in settings as diverse as Ghana, India, and Jamaica, where civic and public leaders are strengthening and leveraging food systems for broader community well-being. Cases described in this

report illustrate the complexity of community food systems, and the central role of smallholder farmers in these settings. Forces of urbanization, globalizing food systems, and climate change pose serious challenges for smallholder farmers, and, indeed, for communities' food systems. Yet, smallholder farmers and other food systems stakeholders continue to adapt their practices to rebuild community food systems from the ground up, literally and figuratively.



The literature as well as experience from some of the cases in this report reveals that there is limited consideration given to community food systems in mainstream local government planning and policy. Not surprisingly, local government planning and policy landscapes may dampen innovation in community food systems. However, with purposeful support from local government planners and policy leaders, also illustrated in this report, there is an opportunity to create more sustainable, equitable, and innovative community food systems.

The experiences of communities in LMICs suggest the need for a context-sensitive, locally informed planning processes and methodologies. Although a great deal of literature and policy and planning precedents are available from across the globe, little fits the contexts, experiences, opportunities, and challenges of communities in LMICs. The experiences of local governments are driven, in many cases, by strong central government regimes. To that end, local governments and their partners have to chart their own Opportunity-Innovation-Equity (OIE) pathway, and within the constraints of broader national and global policy regimes.

Challenges within the food system often link to broader structural challenges. Limited access to housing, education and medical services, inadequate infrastructure, and unequal distribution of wealth by gender, class, or race/ethnicity,

for example, are linked to injustices within the food system. Consider the example of how rice growers fare in the food system. Inequities in food value chains coupled with increasing challenges of climate change severely threaten the livelihoods of smallholder rice farmers, especially women farmers, in many Asian countries, including Nepal, Pakistan, and Vietnam. Some smallholder farmers receive as little as 4 percent of the price paid by consumers.²⁹² In this instance, people's economic struggles within the food system are compounded by their occupational role (farming) and gender identity (women).

Contemporary struggles within the food system are rooted in history. Who in the past benefited from a community's food system? Who controlled the means of production in a community's food system? Who owned land? Who was marginalized? Answers to these questions often shed light on current disparities within the food system. Failure to raise these questions in a food systems planning process may worsen structural and historic inequities in food systems. Designing inclusive and historically-informed planning processes are key to planning, strengthening, and leveraging food systems for community well-being in LMICs.





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