RICH FOOD SMART CITY

HOW BUILDING RELIABLE, INCLUSIVE, COMPETITIVE, AND HEALTHY FOOD SYSTEMS IS SMART POLICY FOR URBAN ASIA

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The COVID-19 pandemic and its ripple effects are testing the agility and responsiveness of governments, businesses, communities, and individuals to act under highly uncertain circumstances. Through the crisis, the primacy of food has revealed itself once again: the business of food supply has reasserted its place in the economy as an essential service. This scenario is not especially surprising. What is surprising is the extent to which, in emerging Asia and elsewhere, food system disruptions and vulnerabilities have been concentrated in urban areas, as have response and recovery efforts.

In emerging Asia, concerns and policies pertaining to food supply, food insecurity, and food-related livelihoods have long centered on rural areas. Yet shifts in climate, demographics, diets, economic structures, and societal expectations from food systems are changing the playing field. They are pushing more and more food-related risks and challenges—and commercial opportunities—toward urban areas and their immediate hinterlands. Although this fact is not widely recognized, the ultimate success of Asian cities with regard to their livability, economic vibrance, resilience, and sustainability will strongly depend on their food systems’ performance. For national and city leaders, the urban food system dislocations and responses triggered by COVID-19 have been a wake-up call.

Before the crisis, evidence from various disciplines was beginning to signal structural weaknesses and vulnerabilities in the food systems of rapidly growing Asian cities. For example, a variety of global studies were depicting some of the cities of emerging Asia as hotspots for the double burden of malnutrition, an array of biosecurity and food safety risks, the loss of high-quality periurban agricultural land, and the environmental consequences of single-use plastics used in food packaging. The proportion of deaths attributed to dietary risks is estimated at 30 percent in East Asia, 22 percent in Southeast Asia, and 19 percent in South Asia. Yet for most of the region’s cities and urban policy makers, food has been a long-standing policy and governance blind spot. As Rich Food, Smart City demonstrates, through a first food systems-themed survey of Asian cities, food system matters are generally being addressed in a piecemeal and reactive manner and are often falling through the cracks—between the different jurisdictions of national and municipal government. At the same time, actions taken by cities in other spheres such as transportation policy and land-use zoning are sometimes having adverse unintended consequences for urban consumers and food business operators.

COVID-19 has exposed and exacerbated the structural weaknesses that reside in every sector of the economy, and it has also been a catalyst for unsuspected sources of resilience. Within the food sector, both of these—structural weaknesses and sources of resilience—have in large part been urban ones. The last miles of the food economy, especially urban logistics, services, and delivery, have been among the most disrupted parts of national food systems while many urban food service workers have been pushed to the pandemic’s frontlines. Purchased food dependence, a hallmark of urban living, has also compounded the threats posed by the virus and its ripple effects, especially in relation to health and nutritional security. And within Asia, much of the food sector’s resilience, too, has come from forsaken and nascent parts of the urban food economy, notably its oft-maligned wet markets and informal marketing channels, and its budding e-commerce networks and capacities.

Rich Food, Smart City provides a powerful call to action for emerging Asia. It argues that to effectively mitigate food-related risks and climate impacts, realize the full potential of the urban food economy, and build back their economic and public health, Asian cities will “need to get smart to get RICH. “That is, they will need to approach food matters in more forward-looking, integrated, and inclusive ways to create urban food systems
that are more reliable (R), inclusive (I), competitive (C), and healthy (H), and thus, more fully supportive of the high aspirations that many cities have set for themselves. The COVID-19 crisis has provided a taste of systemic disruptions that might be, in a sense, yet to come. This book illustrates how Asian cities can take on vital food system issues, including food security, dietary quality, environmental sustainability, and climate neutrality, to better mitigate these disruptions.

Rich Food, Smart City provides new insights into the status of urban food policy and governance across Asian cities of all sizes and offers concrete illustrations of the many policies and programs that Asia’s cities can learn from and implement to improve food system outcomes. The study also provides guidance to different stakeholders, including city planners and leaders, national government officials, and representatives of industry, community, academic, and international organizations.

Safe, food secure, and “food-RICH” cities are an essential ingredient for a sustainable future, and, for the sake of our youngest generations, the time to act is now.

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Urbanization in Asia is accelerating and reconfiguring economies, demographics, resource competition, dietary patterns, and environmental footprints. In Asia, at least half of all food is consumed in cities and urbanization is shifting poverty from rural to urban areas. These and other circumstances are driving more attention to urban food systems. Recently, the COVID-19 pandemic has highlighted the critical value of strengthening urban food system infrastructure in the face of biosecurity risk.

The present study undertaken jointly by the World Bank and the Food and Agriculture Organization of the United Nations (FAO) is the first attempt to gain a systematic understanding of the status of urban food policy across the Asia region. The study develops an empirical rationale for forward-looking urban food policies as part of national food system strategies to improve food security and nutrition for urban residents, especially those with low incomes. It explores the links between urban agriculture, food distribution, urban food environments, nutrition, and dietary diversity and makes a business case for Asian cities to integrate food system matters into urban development, land use, socioeconomic programs, and investments. The study evaluates perceptions of food system challenges and opportunities, examines the mandates available to cities to engage with food-related matters, and identifies constraints to pursuing initiatives in the urban food domain. Through the course of this study, roundtable discussions were organized with city leaders, food practitioners, and policy researchers to gauge city representatives’ perceptions regarding food-related challenges and opportunities.

Urban and periurban food production in Asia is significant and a critical source of nutritionally important fresh fruit and vegetables for many cities. However, urban expansion has been a key driver of cropland loss in the region and poses a threat to periurban agriculture, food security, and balanced diets. Besides impacts on diet quality and heavy consumption of animal source and ultra processed foods, the loss of cropland may aggravate malnutrition and chronic disease and contribute to the rise of obesity, the prevalence of which tends to be three or four times higher in urban areas compared to rural ones.

Food distribution patterns show that Asian cities, in general, are characterized by a high reliance on traditional and informal food distribution channels. These channels are foundational to vibrant and inclusive food systems but also create challenges relating to food safety, the urban environment, and regulatory oversight. COVID-19 has particularly highlighted the need to upgrade fresh food wet markets to maintain their relevance as essential retail food venues that enable broad access to healthy foods.

Food-related policies and programs across Asian cities vary in their number, size, focus, and approach. In addition to exploring some of these, this study sheds light on how cities can leverage institutional food procurement, food business licensing and regulation, emerging information technologies, and other leverage points to enhance food access, nutrition, and dietary diversity. Far from providing all the answers, it is hoped this publication will initiate a longer-term agenda of policy dialogue, research, and action.

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Food and Agriculture Organization of the United Nations (FAO)
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## ABBREVIATIONS AND ACRONYMS

<table>
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<tr>
<th>Acronym</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>ASEAN</td>
<td>Association of Southeast Asian Nations</td>
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<tr>
<td>B2B</td>
<td>Business-to-business</td>
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<td>B2C</td>
<td>Business-to-consumer</td>
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<td>BFPI</td>
<td>Baltimore Food Policy Initiative</td>
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<td>BMI</td>
<td>Body Mass Index</td>
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<td>CLF</td>
<td>Center for a Livable Future</td>
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<td>CoRD</td>
<td>Cost of a Recommended Diet</td>
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<tr>
<td>COVID-19</td>
<td>Coronavirus Disease 2019</td>
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<tr>
<td>DALY</td>
<td>Disability-adjusted Life Year</td>
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<tr>
<td>DHS</td>
<td>Demographic and Health Survey</td>
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<tr>
<td>FAO</td>
<td>Food and Agriculture Organization of the United Nations</td>
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<td>FBDG</td>
<td>Food-based Dietary Guidelines</td>
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<td>FERG</td>
<td>Foodborne Disease Burden Epidemiology Reference Group</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GHG</td>
<td>Greenhouse Gas</td>
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<tr>
<td>GIS</td>
<td>Geographic Information System</td>
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<tr>
<td>ICLEI</td>
<td>Local Governments for Sustainability</td>
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<tr>
<td>LMIC</td>
<td>Low- and Middle-income Country</td>
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<tr>
<td>LUSH</td>
<td>Landscaping for Urban Spaces and High-Rises</td>
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<tr>
<td>NGO</td>
<td>Nongovernmental Organization</td>
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<tr>
<td>OIE</td>
<td>World Organisation for Animal Health</td>
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<tr>
<td>PPP</td>
<td>Purchasing Power Parity</td>
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<tr>
<td>PVS</td>
<td>Performance of Veterinary Services</td>
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<tr>
<td>R&amp;D</td>
<td>Research and Development</td>
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<tr>
<td>RICH</td>
<td>Reliable, Inclusive, Competitive, Healthy</td>
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<tr>
<td>SAFER</td>
<td>Sociétés d'aménagement foncier et d'établissement rural</td>
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<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
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<td>WFP</td>
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Well-functioning food systems are a critical part of the economy, identity, and human and environmental health of Asian cities. Healthy and sustainable food systems should actually be a defining aspiration of Asia’s dynamic cities given the importance of food to some of their leading concerns and priorities, including job growth and innovation, livability and sustainability, fiscal health, safety, and resilience. Moreover, with cities facing significant food-related challenges and opportunities, food ought to have the full attention of Asia’s city planners and leaders and food system matters should be a mainstream topic in urban planning and policy.

In much of emerging Asia, however food has been an urban policy and governance blind spot. Food systems have rarely been an area of urban policy focus and typically feature little in urban strategic and spatial planning. More often than not, urban food system issues are addressed in a piecemeal and reactive fashion. Different municipal government departments typically address the symptoms of food system problems independently, without coordination. Some actions by cities in other spheres may unintentionally be having adverse consequences on urban consumers and food business operators. While urban Asia has rightfully gained a reputation for innovation in many fields, in relation to urban food policy the region is lagging, badly, behind other regions. Of the more than 200 international cities that have signed the Milan Urban Food Policy Pact, and thus committed to mainstreaming sustainable food measures in urban governance and policy, only three are in South Asia (Colombo, New Delhi, and Pune) and there are none in Southeast Asia.
One factor explaining the weak presence of food in urban policy making is institutional. Across Asia food policy has long been assumed to be the mandate of ministries of agriculture. In practice, these ministries have focused their policies on raising primary agricultural production, promoting rural development, and realizing national food security objectives. Urban areas have not generally featured in agricultural or natural resource planning. The development of institutions such as food safety agencies, nutrition-focused departments in health ministries, and market development authorities, suggests that food system matters are being handled by a disparate set of actors with little coordination. In addition, many topics of core concern in urban food systems, including food logistics, food safety, food entrepreneurship, dietary quality, and food waste are not assigned to a designated authority and hence have become areas of relative neglect. This institutional reality partly explains the paradox that urban food is at once “everybody’s business” and “nobody’s business.” It helps explain the urban policy and governance vacuums that persist in relation to food despite the range of stakeholders whose futures are tied to it—and the clear need for coherent multisectoral strategies and coordinated action.

Another important factor is the overwhelming number of issues that city planners and decision makers have to address in rapidly growing Asian cities. Many cities are encountering massive challenges associated with unplanned growth, including traffic congestion, air pollution, solid waste accumulation, underdeveloped physical infrastructure, and poor delivery of health, education, and other services. All of these are highly visible, and challenges for which urban residents are vocally demanding solutions. In contrast, many important food-related problems that are invisible because they are poorly monitored or measured are emerging steadily yet incrementally. As a result, they are not conjuring up a sense of urgency to the same degree that other city problems are. In some cases, this situation has given rise to a notion that urban food system matters can be dealt with later, when cities have become wealthier, and addressed after seemingly more urgent problems associated with early or rapid growth and development are tackled.

Yet, it is precisely the rapid pace of urbanization within emerging Asia that gives urgency to the mainstreaming of a food system perspective in urban planning and governance. The neglect or delay of urban food policies is setting up many Asian cities, unknowingly, for needless setbacks and missed opportunities on a large scale. Cities are unintentionally adopting harmful policies, inadequately addressing emerging risks, and failing to fully leverage food systems to advance city goals. Urban planning and policy decisions being made today and in the coming years will potentially have far-reaching impacts, including adverse consequences, for food providers and consumers. The decisions in question relate to matters as diverse as urban and periurban land-use zoning, the use of public space, investments in water, sanitation, and waste management systems, urban transportation and logistics, and public market infrastructure. Often, their impacts on the food system and various knock-on effects are not being assessed or given much weight in decision making. Meanwhile, many cities in the throes of rapid growth are having to contend with the vulnerabilities of low-income residents to food price shocks and chronic food and nutritional insecurity. Different interventions may be needed for cities’ vulnerable groups than have been traditionally applied in rural or remote areas. Yet few cities are fully mobilized or equipped to take on these new challenges.

At the same time, structural changes in Asian food systems are increasing the potential benefits of shaping urban food systems as well as the costs of inaction. Emerging economic opportunities are one consideration. Cities and towns are the primary residences of Asia’s burgeoning middle classes whose demands for safer, more diverse, convenient, and higher-quality food are creating an enormous market opportunity. Cities already account for more than half of national food expenditures in emerging Asia and this share will rise sharply in the future. Unforeseen or poorly managed risks are a second consideration. Across middle-income Asia, cities are emerging as hotspots for the double burden of malnutrition, for the health and economic burdens of unsafe food and biosecurity risk, and a variety of environmental problems affecting or caused by food production and delivery systems.

Despite often facing mandate and resource constraints, municipalities and nearby administrative areas potentially have distinctive abilities or advantages to address complex food system matters. Cities
can sometimes be more nimble than central ministries in coordinating multisectoral interventions and experimenting with user-centered interventions. Cities can focus on how a challenge presents itself locally, and use local configurations of actors and resources to respond. Cities have the power to shape the built environment and uses of urban space, to influence the fate of urban and periurban cropland and its supply of fresh produce to city residents, and to leverage choke points in the supply chain for potentially wide impact on production and consumption practices. For example, cities can leverage the power of institutional food procurement and of food business licensing and regulation. Cities can also leverage emerging information technologies, as has been seen in the recent explosive growth in food-based e-commerce in China, India, Indonesia, Singapore, and Thailand, and the growing application of various tracking technologies to support quality management and food safety. Of course, there are also areas where cities tend to lack influence, for example in relation to international food trade and the relative prices of different food items.

**A large majority of cities in emerging Asia have yet to fully leverage their areas of comparative advantage to improve their food systems’ trajectories and outcomes.** Nearly three-fourths of the cities that responded to a survey conducted as part of this research were either still interacting with the food system in a largely reactive “firefighting mode,” or were at a relatively early stage of developing and implementing a coherent set of forward-looking, integrated, and inclusive food-relevant policies and programs. There is much more that can and needs to be done across most cities, including ones of different sizes, wealth, and resource endowments. This study highlights areas of food system engagement that are likely to be relevant to the majority of cities in emerging Asia. While the book highlights examples of good practice in many areas, it does not prescribe how individual cities ought to engage in the food system. City circumstances are diverse and this variability impacts the suitability of specific instruments and approaches. Strategies and action plans need to be developed locally and nationally.

**Effectively integrating food into urban policy in emerging Asia will require much experimentation, learning, and exchange.** While a growing body of international experience with urban food policy and planning can certainly help inform strategies and decisions within Asia, it should not be regarded as providing turnkey solutions. Much of the well-documented experience in this field has occurred in cities with very different demographic patterns, socioeconomic conditions, food cultures, and political and administrative systems than those of Asian cities. Approaches that have worked elsewhere will likely need to be adapted, especially in applying them to emerging Asia’s small and medium cities, informal urban settlements, and the informal food sector.

**FOOD AND ASIAN CITIES: CHALLENGES AND OPPORTUNITIES**

Asian cities have a number of distinctive characteristics that simultaneously raise the need for more forward-looking and integrated food policies, and create enormous challenges for them to effectively do so. These characteristics relate to demographics, diet quality and safety, competition for natural resources, and food market structure and infrastructure.

Emerging Asia is experiencing a historically unprecedented scale and pace of urbanization. Simply the growth in Asia’s urban population since 2000 has been greater than the entire size of Western Europe’s or North America’s urban population. As of 2015, Asia had an urban population of 2.11 billion, making it home to over half of the world’s urban population. Going forward, between 2020 and 2050 the urban population is expected to rise by a further 20 percent in East Asia, 58 percent in Southeast Asia, and 81 percent in South Asia. Urban growth and development have not been limited to capitals or even megacities. In fact, cities with populations between 500,000 and 1 million and between 1 and 5 million have been growing at a faster rate than the megacities. Small and satellite towns have also been growing at a rapid pace. Another demographic consideration is the prominent role of rural-to-urban migration. A large proportion of the new urban dwellers were previously farmers who are now largely dependent upon markets for their food. In many Asian cities, a majority of migrants have not found formal sector employment and instead earn a livelihood in the informal economy, especially via some form of food vending or service.
While average per capita income tends to be higher in Asian cities than in rural areas, extremely large numbers of the region’s urban residents are poor, food insecure, and lacking in access to basic services. Some 535 million urban residents in Asia live in informal settlements. This represents 70 percent of the world’s population living in slums. Facing low or variable income, a large proportion of Asia’s urban poor are food insecure, whether measured by perceptions or by indices of chronic undernutrition. A 2016 survey by the Food and Agriculture Organization of the United Nations (FAO) found a higher proportion of urban than rural residents in Asia reported to be moderately to severely food insecure. For the region as a whole, some 23 percent of urban residents reported being food insecure. Chronic malnutrition is also widespread in urban Asia and especially in South Asia. Over one-quarter of children under five are stunted in urban Bangladesh, Bhutan, India, Lao People’s Democratic Republic, Nepal, and Pakistan. And across the region, the stunting rates among the urban poor (the bottom income quintile) match or exceed those of the rural poor.

Asia’s urban environment may be creating the perfect storm for the double burden of malnutrition to take hold. Childhood malnutrition is not only associated with a host of disadvantages that carry through to adulthood, but it has also been shown to increase the propensity to contract and suffer from diet-related chronic diseases. That risk is thought to increase through exposure of affected individuals to obesogenic or otherwise unhealthy food environments. Though not exclusive to cities, such environments seem to be shaping up to be features of Asia’s urbanization. Contributing factors may include widespread out-of-home eating, heavy consumption of animal source and ultra-processed foods, the widespread availability and advertising of unhealthy foods, and low access to fresh produce due to logistical constraints, product losses, and policy biases. Air pollution and infrastructure developments have also made some Asian cities unwalkable, further compounding dietary health problems. In 2017, the proportion of deaths attributed to dietary risks reached 30 percent in East Asia, 22 percent in Southeast Asia, and 19 percent in South Asia. Overweight and obesity levels are growing nationally, yet obesity prevalence tends to be three or four times higher in urban areas than in rural ones.

Urban Asia is also emerging as a major global hotspot in relation to food safety. Reported food poisoning outbreaks typically occur in urban areas—generally in schools, restaurants, and workplace canteens—yet they represent a tiny proportion of actual foodborne illness. Asia’s urban populations are especially vulnerable given their rapid embrace of animal source and formulated foods and out-of-home eating, and their continued reliance on traditional marketing channels with limited infrastructure and oversight for many perishable food items. While the empirical picture is incomplete, a large number of local surveys point to a relatively high incidence of food contamination in Asia’s popular fresh food and street food markets. According to a recent World Bank study, emerging Asia accounts for nearly two-thirds of the estimated productivity losses from unsafe food in the developing world. For a variety of reasons, urban areas are likely to account for a disproportionately large share of these losses.

Urban expansion has been a key driver of cropland loss in Asia and now poses an existential threat to periurban agriculture—a leading source of nutritionally important fresh fruit and vegetables for many cities. In China alone, nearly 43 million hectares of cropland were converted into built-up land between 1987 and 2010. Other large-scale conversions have occurred in Thailand, Vietnam, and India, as well as Japan and South Korea. One study estimates that between 2000 and 2030 Asia will have lost between 16 and 21 million hectares of cropland due to urban expansion. Much of this cropland loss is of very high quality (often irrigated) land, with this quality of land being one of the historical factors that led cities to be positioned or to thrive in those specific locations. The absorption of farmland into emerging cities has mostly been unplanned and driven by narrowly framed economic interests. Fragmented, project-by-project decision making has occurred alongside informal and often speculative transactions.

This displacement of periurban land could potentially have far-reaching impacts. For example, it could have adverse public health implications in settings where underdeveloped logistics systems will not readily support the lengthening of fresh produce supply chains. In some cases, periurban cropland loss could threaten to undermine some of the national food security gains that have been achieved in recent decades. The loss of periurban land also has the potential to deepen food systems’ overall environmental footprint by increasing demands on remaining farmland. In parts of the region, it has already accelerated the intensification of farming
activities on marginal land and the conversion of natural landscapes. The current and future fate of periurban agriculture could thus have significant national implications, and this possibility points to the need for coherent and consistent strategies and policies from the national to the municipal level.

Despite the modernization of many Asian cities, traditional and informal distribution channels continue to play a major role in food supply. Compared with countries at similar levels of per capita income in other regions, Asian countries tend to have lower rates of supermarket penetration. And most supermarkets and other modern retail outlets such as convenience stores in Asian cities tend to primarily sell packaged and processed foods. In most Asian cities, traditional community markets often referred to as “wet markets” continue to account for a majority if not a predominant share of consumer purchases of fresh products, including fruits and vegetables, fish, meat, and eggs. Large cities still have hundreds of such markets, although typically, only a small proportion of them have undergone physical upgrading to address hygienic or environmental problems. Higher-income households with more access to motorized vehicles and refrigeration are tending to shop less frequently but to rely more on supermarkets for their food. But the bulk of the population in most cities still relies on traditional community markets and vendors because of their convenient location, greater diversity of fresh produce, more affordable or flexible pricing, and other qualities. From a municipal perspective, this situation presents advantages and disadvantages. On the one hand, the plethora of community markets provides the basis for an inclusive food system, as they are convenient to access for consumers and support the livelihoods of large numbers of people. On the other hand, the dominance of informal and semi-formal food distribution systems creates challenges for regulatory oversight and can conflict with other city goals and plans, including different uses of urban land and the development of transportation throughways.

The COVID-19 pandemic has exposed the fragility of urban food systems across emerging Asia by making it more difficult for many urban residents to access or afford staple and high-nutrient foods. Many cities have experienced rural-to-urban supply and logistical disruptions, the temporary or prolonged shutdown of markets, schools and institutional canteens, and other venues critical to urban food supply, and exacerbated concerns about food safety and hygiene. In many cities, the livelihoods of tens of thousands of people involved in food services and delivery have also been significantly disrupted. While the pandemic’s impacts are still being felt and it is too soon to reach definitive conclusions, it does seem to be the case that the prior existence of coherent food system policies, governance, and monitoring have enhanced cities’ ability to respond to the food-related challenges triggered by the pandemic.

While the above factors point primarily to food system challenges for urban planners and administrators to contend with, emerging Asia’s urban food economy is also a tremendous business opportunity. According to a Brookings Institution study, close to 90 percent of the next billion new entrants into the middleclass will be in Asia. The bulk of them are residents of emerging Asia’s cities. While these rising consumers’ spending patterns will certainly involve a higher percentage of non-food items, their food expenditures will also grow and further diversify away from low-cost staples toward animal source and processed foods, fruits and vegetables, and out-of-home eating. These shifts in consumption patterns have already been taking place over the past 10–15 years, especially in urban parts of Asia. Still, going forward, huge opportunities will avail themselves to farmers, food companies, and many supporting service providers who will meet—and create—the new needs, preferences, and expectations of urban consumers, including for food variety, convenience, relevance, and safety.

CURRENT STATE OF URBAN FOOD POLICY IN ASIA

There currently exists no systematic or comparative assessment of the state of urban food policy in Asia. Individual case studies do offer useful insights into the scope for action and the challenges of implementation. But they paint a partial and skewed picture of the regional policy landscape, and one that says particularly little about the experiences and realities of secondary and tertiary cities.

Although they are just a beginning, the responses obtained from 170 cities in 21 Asian countries surveyed for this study offer new and broader insight into the state of urban food policy in the region. Indeed,
without being fully representative or comprehensive, responses were received from a diverse collection of cities about a wide array of food system topics. The survey solicited perceptions from various city officials about food-related problems and opportunities, cities’ mandates and constraints to engage, and food-related strategies, policies, and programs. The 170 surveyed cities are also diverse in size and level of development. About 40 percent have fewer than 200,000 people, 30 percent have between 200,000 and 1 million people, and 30 percent have over 1 million. Half of the surveyed cities are in lower-middle-income countries, 25 percent are in upper-middle-income countries, 20 percent are in low-income countries, and 5 percent are in high-income ones.

The food-related policies and programs across Asian cities vary in number, size, focus, and approach, yet have a strong focus on the regulation of urban and periurban agriculture and food distribution. Interesting differences were found among cities of different sizes. While some interventions are relatively common (or rare) across cities of all sizes, some policy instruments such as food price controls and food shortage contingency programs are found only in larger cities. A number of differences were also discernable along national lines. For example, food banks that redistribute fruit and vegetables to vulnerable people are common among Indian cities but rare elsewhere. The direct provision of technical and financial support to urban farming activities is common among cities in Indonesia, Nepal, the Philippines, and Vietnam, but not widespread in Thailand or India, where the zoning of farmland mostly precludes urban farming on non-farmland. Government involvement in food wholesale markets is common in China, India, and Vietnam, yet uncommon in other emerging Asian economies. Overall, there appeared to be rather scant focus on programs to influence consumer access to healthy, nutritious foods.

Survey results were used to rate the degree to which cities’ food-related policies are proactive, integrative, and inclusive. Survey responses were scored so as to examine cities’ food-related work—their plans, diagnostics, regulations, initiatives, and processes—from the perspective of these three dimensions of good practice. Cities’ overall policies were considered proactive when their work was oriented toward future problems or opportunities; integrative when it was multisectoral in scope and coordinated across multiple entities; and inclusive when it was attentive to the welfare of poor or otherwise vulnerable consumers and food suppliers and involved broad participation of diverse stakeholders. The opposite of these good practices consists of reacting to food system problems; engaging a narrow set of food system issues and doing so in a fragmented way with limited administrative coordination; and making decisions from the top down with limited stakeholder involvement or focus.

This three-dimensional benchmarking analysis was used to classify city policies as belonging to one of four categories, from reactive to food-smart. The categories are meant to indicate cities’ “distance to the frontier” of good urban food policy and governance:

- The “frontier is reached when cities are pursuing food system matters in highly proactive, highly integrative, and highly inclusive ways. Cities applying this approach are categorized as food-smart cities. This does not mean that such cities have fully resolved their food-related challenges or realized the full potential of their food economies—or even that the frontier is fixed. The race to good food policy is more like a marathon—without a finish line—than a sprint.
- On the other end of the spectrum, cities deemed to have reactive food policies primarily respond to food problems and try to mitigate their adverse impacts rather than act to prevent them or take advantage of emerging opportunities—often for a lack of mandates, capacity, or political commitment to bettering food system outcomes.
- One step ahead of reactive food policy cities are ones designated as engaged. These cities engage proactively in some parts of their food system and have begun to forge synergies across some interventions, yet continue to display reactive responses to many food system problems.
- Finally, one step ahead of engaged cities—and one step behind food-smart ones—are cities whose policies are deemed progressive. These cities tend to be forward-looking yet their food system work tends to be notably less integrative or less inclusive than it is in cities that earn the food-smart
policy label. In many progressive food policy cities, implementation lags behind the level of ambition apparent in their plans.

Judging from this analysis, nearly three-fourths of cities that responded to the survey are at relatively early stages of developing and applying proactive, integrative, and inclusive food policies. Of the 170 surveyed cities, 49 of them, or 29 percent, fall into the reactive city category. Most surveyed cities, that is 75 or 44 percent of them, are one step ahead in the engaged category. For a large majority of cities in these two categories, food-related matters are not yet mainstreamed into more general urban governance and development planning. Among cities with fewer than 3 million inhabitants—that is, among all but the largest cities surveyed—most were in these early stages of food system engagement: 76 percent of very small- to medium-sized cities (population <1 million) and 69 percent of large cities (population 1–3 million). Several of the region’s capital cities also fall into the reactive category, although most are deemed engaged.

Only 8 percent of the 170 surveyed cities were deemed to be food-smart, the designation reserved for the best-rated cities. Cities of every size are represented in this highest category but no city in this category is from a low-income country. Nearly one-fifth of cities qualified as progressive. While they highlight patterns and point to a few interesting outliers, these survey results broadly confirm the pre-study hypothesis that many of emerging Asia’s cities are lagging behind peers in other regions in relation to food policy initiation and activity.

ASIAN CITIES CAN DO MORE

Even in the face of constrained mandates and resources, there is much more that Asian cities can do to improve the trajectory and outcomes of their food systems. The room for maneuver is quite varied and authorities and others can exert influence over different parts of urban food systems in a myriad of ways. They also may do so for different reasons. Briefly summarized here is a range of motives and approaches spanning four broad categories of intervention: ones relating to overarching urban food system governance, and others targeting consumers, food marketing systems, and primary production.

### Building the foundations of city-level food system governance

Possible reasons for engaging with urban food system governance:

- Creating a space and developing the capacity within government to systematically consider food-related matters across multiple areas of policy making.
- Engaging strategically and proactively in the urban food system.
- Coordinating and connecting different food system stakeholders.
- Gaining more perspective on the food system implications of various policies, and potential tradeoffs implied by food system or other interventions.
- Creating a touchpoint for the city to connect with non-city stakeholders on food system matters, including higher levels of government and translocal networks.

Cities may be the natural pioneers of food system governance in rapidly urbanizing contexts. For a host of demographic, political, and economic reasons, cities are being propelled to the forefront of the food policy debate and are increasingly needing to and being expected to assume a leading role in food systems’ governance. Cities are in a position to lead the transition to, or at least help fashion, healthier and more sustainable food systems—and to do so through more collaborative and integrated policy approaches. Those approaches are tacitly viewed by many as being better equipped than more traditional, centralized, and top-down approaches to place the values of economic performance, public health, social justice, and ecological integrity on more equal footing. Such approaches are also understood to be more accessible to cities, to the extent that they enjoy some proximity to communities and greater administrative agility than higher levels of government. Cities may be the level of government best able to develop and actually pursue an integrated food policy—national government efforts in this direction having not progressed far beyond the agenda-setting stage.
Cities of all sizes and means have an interest in establishing food system governance structures early on, regardless of the depth and breadth of the interventions they aspire to. Although food system governance structures need not precede city action, giving thought to food system governance can help cities establish their scope of intervention, establish transparency around how the public sector is already intervening in the food system, and strategically align public resources with priorities. Determining to intervene minimally is better than not making an explicit decision at all and can help contain the costs of food system interventions in cities that face many competing priorities. Where food system risks are present, preventive action can help minimize city expenditures on food system challenges—one example being the need to respond to overt breaches of food safety.

A growing body of international experience, especially in middle- and upper-income countries, points to important steps that can be taken to establish food system governance. These include (a) formalizing food policy as an area of city focus through laws and strategies; (b) defining institutional responsibilities; (c) determining city priorities, modes of intervention, and performance tracking; (d) mobilizing public resources for all of these; and (e) joining or creating translocal networks of cities sharing experiences and accountability in the area of food system governance, such as the Milan Urban Food Policy Pact. While no single institutional arrangement has emerged to govern food policy at the municipal level, many if not most cities that have explicitly turned their attention to food system governance have appointed a lead agency, new or existing, to oversee a networked governance structure involving a wide range of administrative offices. Most of these structures also entrench the participation of nongovernmental food system stakeholders. In large metropolitan areas, the institutions involved in food system governance structures can span multiple geographically contiguous or imbricated administrative units or jurisdictions.

As in other areas of policy, food system priorities can be established through a combination of data collection and analysis as well as public consultation and involvement. A strong emphasis on deep community involvement—spanning the business and citizen sectors—has been a nearly universal feature of recent city engagement around food policy. While this emphasis reflects emerging best practices in policy and program design, dependence on community input in the arena of municipal food policy also no doubt reflects the major data gaps most cities have to contend with in measuring food system realities. It is never too soon for cities to start collecting data supporting the basic description of the municipal food system, and over time, an increasingly sophisticated assessment of how well the food system is performing.

### Downstream interventions relating most directly to urban consumers

**Possible reasons for engaging with urban food consumers:**

- Enabling better dietary patterns to prevent the costly rise of diet-related chronic disease
- Empowering consumers to avoid unsafe food and its negative health impacts
- Eradicating undernutrition to ensure social justice, social stability, and economic health
- Ensuring social protection of vulnerable urban populations through functional safety nets
- Promoting ecofriendly consumption to reduce food systems’ environmental externalities
- Promoting food choices that also support the local food economy

Cities in Asia face significant opportunities to shape food environments and influence consumer food choices and dietary patterns. Cities can leverage their proximity to urban populations—to communities—to develop tailored, user-centered, adaptive interventions, and to support their needs directly. They can utilize social marketing techniques, apply fiscal measures, and also influence dietary choices or patterns directly by influencing how public institutions like schools, hospitals, and workplace canteens carry out food procurement and preparation.

One way in which cities can enhance healthy food access and consumption is by teaching and training residents to do better by themselves. They can not only inform residents about dietary health and nutrition, but also help them put that knowledge into practice by giving them the tools they need to shop affordably.
access food safety programs when applicable, cook and store food that is nutritious, healthy, and safe, and so forth. Efforts, to be relevant, need to address the full spectrum of urban consumers. Many cities are in a position to integrate nutrition education into school and various educational curricula. New parents might benefit from learning about what and how to feed their infant in the first year, and children from learning about the benefits of eating fresh fruits and vegetables. People already affected by diet-related chronic disease may benefit from learning how to manage or reverse their specific conditions through diet.

Cities can also take measures to change consumer behavior that may or may not require consumer knowledge and awareness of dietary health. Knowledge is often insufficient on its own to motivate and get people to do even what is in their power to change (economic and otherwise), and in some contexts, unhealthy eating habits are strongly entrenched and buttressed by unhealthy food cultures and commercial interests aligned with these. To get around this and other behavior change challenges, social marketing, branding, and other interventions appeal to principles of social psychology. For example, school programs integrating hands-on experience growing food may increase children’s acceptance of or interest in consuming fresh fruits and vegetables. Programs teaching nutrition can be more or less hands on, integrating not only nutritional science but also food shopping, cooking skills, and social elements.

Interventions targeting public or publicly influenced institutions involved in food delivery may be a major avenue for cities to influence dietary health. Institutions potentially involved in food purchasing, preparation, and service include schools, hospitals, offices, universities, and prisons. These institutions’ wide reach of consumers gives them the ability to directly influence the diets of many. In addition, the high volumes of food they handle mean that changes in their practices may spill over into the food system more broadly. The hope is that demands placed on suppliers to public institutions, such as restrictions on the use of certain ingredients, or requirements to serve fresh fruits and vegetables and legumes, and meet food safety and quality standards, may lower the cost and other barriers to their replication in less specialized markets. The levers of municipal authorities to shape institutional food procurement are varied and include executive decisions relating to food spending, laws and regulations, contractual and licensing requirements, conditional funding, public recognition, convening efforts, and prizes. Additional program design variables include the pricing, timing, placement, and publicity of services; the focus on upstream measures relating, for example, to cooking and storage facilities, food service staff capacity, and supplier relationships; and the inclusion of complementary food marketing and educational measures.

Cities can also encourage employers to develop worksite wellness programs that increase access to healthy foods and otherwise contribute to healthy eating. Such programs can make important contributions to ensuring employees’ access to healthy eating options during work hours. They can, for example, ensure that employees have sufficient time to eat healthily, subsidize healthy food options to make them more affordable, and even support breastfeeding in various ways, allowing mothers to follow through on recommended feeding practices. Cities can offer employers material incentives, or help them implement programs by providing them nutritional guidance and templates that minimize the upfront investment needed to put such programs in place.

Pricing policies including taxation have been found to be an effective approach to reducing noncommunicable disease risk factors such as tobacco and unhealthy diets, and cities worldwide are putting this approach to the test. The range of pricing interventions that cities can undertake is sometimes limited by their authority or capacity to tax or otherwise influence the costs of food. That said, cities have been among the pioneers of food—or rather beverage—taxes, along with a number of national governments. Beverage taxes are reducing disease at a population level. At the same time, they (or other potential food taxes) cannot be expected to solve dietary challenges on their own.

For some issues, including addressing various forms of malnutrition in slums or other underserviced areas, Asian cities will need to be willing to experiment. Dietary health interventions targeting residents of slums appear to face a variety of implementation challenges due to the high mobility of target populations, the lack of social services that can be leveraged to administer programs, and low levels of follow-up among participants. Evidence on effective dietary health interventions in slums is also extremely limited.
Although infants and children living in slums face a high risk of malnutrition and stunting, few preventive interventions have specifically targeted these parts of cities, and those that have, have been limited in their range. Furthermore, the implementation difficulties that are specific to slums also make interventions hard to evaluate since a lack of effectiveness may relate less to core interventions than to the inadequacy of measures dedicated to managing participant outreach and retention, and other challenges that are specific to slum contexts.

**Interventions relating to urban food logistics and marketing**

Possible reasons for engaging with urban food logistics and marketing:
- Reducing congestion related to the movement of food.
- Enhancing safe, healthy, and demand-responsive food access.
- Reducing food loss and waste and managing organic and inorganic waste streams.
- Ensuring social protection of vulnerable urban populations through functional safety nets.
- Reducing tax evasion in the informal food economy.
- Promoting a city’s image factoring in aspects such as orderliness, functionality, cleanliness, social justice, poverty, and cultural vibrance.

**Food logistics and marketing are among the key areas in which cities have a comparative advantage in engaging with food systems, and could have significant impact.** A combination of regulation, investment, and other support measures could have significant impacts on public health, food-related business development, and livelihoods. Interventions can be aimed at many different actors, ranging from grocery or convenience store chains to small independent fruit and vegetable stands, organized fresh food markets, independent food shops, and other types of food merchants operating within or outside the formal economy. Similarly, supportive measures and investments can take on many forms.

**Cities can use urban planning and related investments and regulations to indirectly shape food marketing environments supportive of adequate and healthy diets.** Some cityscapes are evidently more conducive than others to the development of fast food chains, convenience stores, and on-the-go eating, just as some are more conducive to the development of traditional markets, small food businesses, and social congregation and eating formats. The width of roads, for example, is a feature of city landscapes that is understood to influence the speed of traffic flow, walkability, and ways in which space is used, all features that have a bearing on food purchases and consumption. Mixed-use zoning that allows food retail to be co-located with residences can also influence shopping and eating patterns. Public transportation systems can similarly condition how, and how fast, people can access food markets, how much time people have to eat, and the nature and size of food retailers. Some cities have deliberately worked to ensure that all residents live within a short distance to a food market.

**Asian cities can use zoning and licensing rules to help ensure that healthy food is available and unhealthy food kept at bay, though the scope for using such instruments is limited by the urban food sector’s persistent informality in the region.** Zoning rules are one lever cities can use to restrict the commercial operation of certain types of business, including ones known to be vehicles of unhealthy ultraprocessed or fast foods. Cities can also use licensing to incentivize food businesses to shape formal food retailers’ practices and guide them to supply and promote healthy foods. Licenses can, for example, require that food stores supply and saliently position minimally processed plant-based foods and meet basic food safety requirements, to start or continue operating. In this and other interventions, however, Asian cities have to contend with the reality that much of the food sector lies outside the formal economy. In fact, caution is warranted to avoid inadvertently dissuading or disincentivizing food businesses from operating formally.

**Asian cities will need to develop new food wholesale and logistics models able to support the disparate needs of a diversity of food retailers.** A common trajectory for cities in high-income countries, as they grow...
and mature, is to move wholesale food markets from densely populated parts of the city, where they cause increasing congestion and other problems, to city peripheries. The successful relocation of wholesale markets from more to less densely built-up and populated parts of cities, however, assumes that an adequate number of market users have the capacity to relocate their business dealings to wherever wholesale markets are moved. Inevitably, not all users are able to make the transition and wholesale market relocation can cause a shift in cities’ food supply, privileging large and well-organized actors over small ones of more limited capacity and means. Experience with such transitions shows that there are typically winners and losers but that the market adjusts. However, experience with such transitions comes predominantly from cities with high rates of supermarket penetration and formality. Multitudes of small vendors operating informally in Asian cities would lack access to the specialized vehicles and trained staff they need to carry merchandise between their suppliers and customers in the event of wholesale market relocation. And if they did not lack these, their trips would add to congestion problems in cities already overwhelmed by traffic and gridlocks. A failure to foresee and plan around these challenges could contribute to decimating informal food operations and leave large swaths of consumers in Asian cities unable to access affordable healthy food.

Asian cities are generally characterized by a high level of reliance on the informal food sector, and efforts centered on disbanding informal food markets and operations are at a high risk of backfiring or doing more harm than good. Challenges associated with informality include tax evasion, congestion, messy markets and image problems, unsafe food, and unhealthy snack food. Risks of disbanding informal activity, however, include disruptions to food sector livelihoods and safety nets, the loss of affordable fresh and prepared food markets (and their replacement by convenience stores and fast food chains that are conduits for ultraprocessed foods and unhealthy eating habits), and the erosion of local food culture. Many informal street vendors in cities are from low-income neighborhoods and many are organized along ethnic or cultural affiliations correlated with migration patterns to these cities. Given these realities, most Asian cities will benefit socially and economically by finding ways to engage with the informal food marketing sector constructively. Incremental improvements can be sought through a mix of regulatory, training, and other measures, while longer-term measures may involve the formalization of even very small food system operators. In this regard, the historical experience of Singapore is relevant, in the gradual but orderly upgrading and formalization of street vending there culminating in today’s community and commercial food courts.

Investments in wet market upgrades may be one way to maintain the relevance of these important food retail venues, enhancing their utility while addressing their downsides. The latter include unsafe food handling, tax evasion, and inefficient or noisome uses of space, which can in turn detract from city image and investment. Municipal investments can address their need for clean water, waste management, transportation and accessibility, energy and cold storage, and ‘softer’ needs relating, for example, to standards and metrology, dispute resolution, market information, and even professional training and licensing. Support for collective action among small food retailers operating informally—whether independently or in larger wet markets—may open up possibilities for integrating these operators, and the vital functions they serve, into modernizing wholesale marketing systems. The experience of Ahmedabad, India also points to the benefits of working with street vendor associations to design and implement sustainable solutions. At the national level, India has been more proactive than many countries in its efforts to integrate street vendors into policy making processes.

In most Asian countries, municipal authorities have an important yet often unrecognized role in addressing emerging food safety risks. More often than not, it is municipal departments that are responsible for the inspection and oversight of wholesale and retail markets and food businesses and vendors, and the reporting of foodborne disease among the urban population. However, these functions are often under-resourced. Municipal food safety units commonly focus their day-to-day efforts on policing the limited pool of larger formal sector food enterprises, and otherwise ‘react’ to food safety outbreaks and other negative events. With a growing recognition of the public health and commercial costs of unsafe urban food, municipalities now need to invest more and more smartly in food safety capacity, to focus more on preventive rather than reactive measures, and to place as much effort on enabling and facilitating improved food vendor and provider practices as on enforcing regulatory infractions.
Interventions relating to urban and periurban agriculture

Possible reasons for engaging with urban and periurban agriculture:

- Protecting dietary health by protecting the supply of nutritionally vital fresh fruits and vegetables and minimally processed foods to residents (through the protection of cropland).
- Managing the disruption to the livelihoods and food supply of those dependent on it (through the development of adequate safety nets).
- Managing and possibly supporting the performance, environmental or otherwise, of de facto urban farming activities (through urban extension and the like).
- Leveraging farming as an inexpensive way of maintaining pervious space, good for storm water management, the offtake of waste, and (debatably) the upkeep of parks.
- Preserving farms for edutainment purposes (requiring a much smaller scale).

The near-irreversibility of urban and periurban cropland conversion supports the need for careful analysis—at the city level and above—of its various implications and tradeoffs. For example, national or higher level analysis is needed to understand the contributions of urban and periurban cropland to national and city-specific food security, factoring in geographic differences in cropland quality and potential, the relationships between the geography of production and food access and pricing, the environmental externalities of farming and land-use change, and food trade flows. By reflecting on the near- and longer-term functions or urban and periurban agriculture, cities will be better placed to determine how much space and support is needed. Although the protection of periurban cropland is not the sole responsibility of cities—and cities rarely have full or direct control over periurban land-use change (especially metropolitan ones)—its success generally requires their willing and proactive participation. Decades of experience with land protection policy point to political will and commitment to a course of action as being a stronger factor of success than any particular combination of instruments. Experience also supports that effective cropland protection rests on the use of multiple instruments in combination, including both direct and indirect measures as well as carrots and sticks.

Integrating agricultural considerations into spatial planning is probably necessary, though not sufficient, to ensure that strategic cropland is identified and saved from seeing its economic viability condemned. This can occur when cropland is bisected or atomized by transportation arteries, infrastructure, and other development. The integration of an agricultural perspective into planning can help cities identify and address general urban development policies and practices that may unintentionally be increasing pressure on farmland. Indeed, cropland protection can also be approached through the removal of policies as much as the adoption of new ones. For example, certain municipal policies or practices, including well-intended ones promoting more compact development, may be accelerating the conversion of farmland by inflating urban land and housing prices and fueling urban sprawl. Support from higher levels of government can be helpful or even necessary to protect farmland as has proven the case in China and Japan. One course of action for national governments is to establish incentives for municipal leaders to make cropland protection a higher priority.

For most Asian cities, market forces will inexorably lead to widespread periurban cropland conversion or abandonment. To counteract this, more direct cropland protection policies are needed and these can draw from a well-developed toolbox of instruments. Many instruments involve or derive from zoning rules, and land transfer and development rules more generally. Overall, they function by designating areas, including agricultural ones, in which land development, land market, fiscal, and other rules apply. In other words, they subject agricultural land to special treatment. Examples include right-to-farm laws, agricultural easements, restrictions on the subdivision of land, transfer of development right schemes, preemption rights on the sale of agricultural land, and special tax treatment schemes, among others.

Many urban planning instruments can also be used to make space for and actively support urban agricultural activities. Urban planning can proactively build food production into urban spaces, notably by ensuring that those spaces can efficiently access agricultural inputs (including grey water and waste-based...
actual investments in infrastructure supporting urban farming, such as irrigation infrastructure, may take the form of subsidies to enhance the value of these activities or mitigate their externalities. Other examples include urban agricultural extension services, local food procurement requirements for municipal institutions (which provide urban farmers a market), investments in or support for markets and marketing services for local farmers, and the dedication of publicly owned land to farming. Here too, the removal of certain policies is sometimes what is needed for urban food production to grow or thrive. For example, it is common for indoor and rooftop farming operations to be stymied by regulatory restrictions on farming activities in parts of cities not zoned for agriculture or in nonfarm buildings—and to seek exemption from them or their removal.

**THE WAY FORWARD: BUILDING STRONG CITIES WITH “RICH” FOOD SYSTEMS**

Recent developments including non-negligible losses of periurban agricultural land, the rise in incidence of foodborne and diet-related disease, the surge in food-related e-commerce platforms and sales, and widespread food market disruptions associated with the COVID-19 pandemic, have raised stakeholder awareness of the growing challenges and opportunities associated with urban food systems in emerging Asia. The pandemic has highlighted the underlying fragility of food systems and the consequences of limited food diagnostics and governance in many Asian cities. Already strained arrangements for food logistics, food safety oversight, the food security of vulnerable populations, and food waste management have sometimes buckled under the weight of supply and livelihood disruptions, movement restrictions, and market closures associated with the pandemic and responses to it.

As the countries of emerging Asia rein in the pandemic and transition to post-pandemic recovery, the region’s cities will be left facing an even more complex food agenda than before, including heightened concern about food insecurity and public health. For many cities across different size categories, food-related matters will represent some of their most prominent risks as well as economic opportunities of the coming decade. For the many cities that have been approaching food system matters in a reactive, firefighting mode, a business-as-usual approach is itself a risky strategy. In the absence of more effective agrofood policies and governance, those cities may well find themselves overwhelmed by a cocktail of land conflict, nutritional insecurity, food contamination, and environmental degradation problems. As for the many other cities still in early stages of developing and implementing integrated and inclusive food policies, they will need to deepen and accelerate their efforts to get the most impact.

**Raising urban food system aspirations**

Aspirations for urban food systems need to become better aligned and commensurate with the broader economic development and societal aims of emerging Asia’s fast-growing cities. The majority of Asian cities lack explicit policy goals that relate to their food systems. When they do, those goals often mimic national ones (those relating to food security) and do not relate to the specific circumstances of individual cities. Otherwise, stated goals tend to focus simply on the avoidance or reduced impacts of disruptive shocks related to weather, food prices, food safety outbreaks, and so on. Goals of this nature can be useful for risk mitigation purposes yet say nothing about the opportunities available to cities through food system and dietary advancement. While there are examples of positive outliers, it is uncommon for Asian cities to articulate high aspirations for their food systems. It is even rarer for food-related goals to be commensurate with cities’ typically lofty aims relating to fiscal and economic strength, job growth and innovation, resilience, greenness, safety, and livability.

Over the longterm, strong Asian cities will be those with “RICH” food systems, or food systems that are:

- **Reliable (R)**—ensuring basic food security, provisioning an adequate and stable supply of food that is resilient to shocks. This characteristic relates to broader city goals of social stability, resilience, and disaster preparedness.
- **Inclusive (I)**—serving the least well-endowed residents of cities, freeing themselves of food access and nutritional health inequality, and making positive contributions to a dynamic and fair local economy. This characteristic relates to broader city goals of social stability, poverty reduction, and social justice.

- **Competitive (C)**—contributing to innovation, economic dynamism, and economic diversity, and attracting businesses and investors of various sizes and origins. This characteristic relates to broader city goals of economic vibrance and recovery, job creation, and fiscal health.

- **Healthy (H)**—realizing a safe and nutritionally sound diet while being environmentally benign and a net contributor to the health of the local economy. This characteristic relates to broader city goals of greenness, wellness, livability, and fiscal health.

**Stepping up urban food analytics and knowledge-sharing**

Suitable and measurable indicators for each of these dimensions of urban food system performance can be developed at the individual city level, yet with guidance from national, regional, or other networks of like-minded cities. Over time, such indicators can be used to gauge the influence and effectiveness of major city interventions in their food systems and relative to their consuming residents. Chapter 5 proposes up to a dozen metrics for each of the RICH performance categories. Some of them can make use of existing data or periodic surveys that are already undertaken. Others would require new surveys or additional ways of gathering the requisite information on a timely or regular basis. It is unrealistic to expect individual cities, especially smaller and less well-resourced ones, to invest heavily in urban food data gathering and analytics. Much of the effort may need to be led at a national level or be pursued through a coordinated regional program.

Indeed, improved food system performance monitoring would need to be part of an expanded multiyear program of urban food analytics in emerging Asia. This study found that urban planners and policy makers in the region face significant information gaps pertaining to the structure and performance of urban food systems. On many food system topics, up-to-date and representative data are not available or not adequately disaggregated between rural and urban areas. Even when aggregate level urban data are available, they generally cannot be used to distinguish patterns or trends in smaller versus larger cities. Accurate data pertaining to the (often very large) informal parts of urban food systems are almost nonexistent. Systematic but nimble survey work will be needed to address these and other knowledge gaps in a rapidly evolving context. Recourse should also be made to big data analytics, crowd sourcing, and other emerging techniques.

The practitioner community is also at an early stage of data collection and analysis relating to the institutional arrangements shaping urban food system governance in Asia and the portfolios of policies and programs being deployed by cities. The limited survey work carried out for this study is, to the best of our knowledge, the first attempt to gain a systematic picture of the status of urban food policy within the Asia region. Most prior work consists of individual case studies documenting positive experiences and best practices. More detailed analysis of our survey results will be possible, but we did not endeavor to gather systematic data on food-related outcomes in the surveyed cities. Hence, relationships between action (or inaction) and results cannot be analyzed at this time. At a regional level and for cities of different sizes and characteristics, we are not yet able to draw definitive conclusions about what works, and what does not. Doing so will require a program of applied research and strengthened knowledge management, particularly to learn more from the experiences and realities of small- and medium-sized cities.

**Mainstreaming food in urban policy marking and acting in priority areas**

Although Asian cities will be able to draw upon an accumulating wealth of international experience addressing food system matters through urban policy, they will nonetheless be called upon to develop their own “recipes.” As noted, the scale, rapidity, and nature of changes reshaping urban Asia—and of course
the diversity of the region—mean that Asian cities face a unique set of circumstances. In fact, that uniqueness, combined with evidence limitations on what works and why, presents urban leaders with a dilemma. To what extent should they privilege approaches that are more tested and possibly thought or known to be effective yet limited in their reach, or rather, focus on more pioneering yet less studied ones with more potential to be game-changing at the system level? The way forward will be for individual cities, countries, and groupings thereof to determine, in line with the paths best suited to their circumstances.

The analysis in this study, especially in Chapter 4, indicates that the menu of potential urban food policy instruments for emerging Asia is very long. For many cities, there is scope for doing much more to influence the trajectories and outcomes associated with consumer choices and behavior, food marketing and logistics, and primary agricultural production. And as discussed in the study, doing more can take multiple forms, including advocacy campaigns, regulation, investment, or facilitation of investments and services provided by the private sector, Nongovernmental Organizations (NGOs), or others. The appropriateness of different forms of action will depend on local circumstances, including the structure and complexity of local food markets, city demographics, and the availability of financial, human, and institutional resources. Some efforts can target specific population groups or geographic areas while others might seek to influence investments, behaviors, and outcomes on a city-wide basis. Each city or cluster of cities should develop their own strategy and action plan, ideally resorting to extensive multistakeholder consultation.

Table 0.1 identifies a dozen action areas for Asian cities to intensify their pursuit of a RICH food system. This is an illustrative rather than a comprehensive list and most of these interventions serve multiple purposes, potentially contributing to more than one higher-level food system aspiration.

| Protect prime urban and periurban cropland, potentially through planning and zoning measures, land-use restrictions and prescriptions, land market measures, programs to increase the local residents’ appreciation of local farmland, or other means. | Reliable | Inclusive | Competitive | Healthy |
| Make space for urban farming in its multiple forms. This could be on public land, rooftops, near public institutions, and in underutilized public spaces. | | | |
| Provide infrastructure and services to support sustainable agricultural activities. Anticipate environmental hazards and enable access to technical and financial services. | | | |
| Invest and partner in modern horticultural parks to support residents’ access to fresh produce, create jobs, and manage urban waste streams. | | | |
| Invest and partner in agrofood incubation and training programs to support innovation in sustainable agriculture, nutritious food business development, and youth entrepreneurship. | | | |
| Invest in market system strategic planning and partner with private sector in locating and developing modern (gateway) wholesale markets with multiple services such as cold storage, logistics, and market information. | | | |
| Upgrade and develop the infrastructure and management of community-level fresh produce markets to ensure broad access to healthy foods and address environmental and food safety risks. | | | |

Table 0.1: A Dozen Promising RICH Food Agenda Items for Cities in Emerging Asia
Leverage public food procurement for public or regulated institutions such as government agencies, hospitals, schools, and corrections facilities to support the provision and consumption of healthy and sustainable foods (that is, diverse, minimally processed, and primarily plant-based or low–foodchain items).

Facilitate multistakeholder programs and interventions to improve nutrition and dietary diversity especially among women, infants and children in poor households and informal settlements.

Increase awareness of nutritional health among members of the public as well as food system and public health professionals through public education, professional licensing, and campaigns.

Develop programs to induce upgrades in farming, food handling, and food preparation practices to reduce food safety and other biosecurity risks from farm to fork. Undertake interventions such as enhanced food safety hazard surveillance and food facility inspections using risk-based approaches.

Facilitate neighborhood or city-wide food loss and waste partnerships and initiatives, including ones supporting preventive measures, secondary food use, composting, and the bioeconomy.

Note: Contribution to RICH objectives: Substantial (**), Moderate (*), and Minimal (*)

CALLS TO ACTION FOR DIFFERENT STAKEHOLDERS

Asian cities have considerable room for maneuver to impact the trajectory of their food systems but this does not mean that they can or should act alone in this endeavor. In some areas, cities will need to be better guided or empowered to act on food matters by national and state institutions. To design and implement successful plans and programs, some Asian cities may require technical and financial assistance, and most would benefit from peer-to-peer experience sharing. Indeed, many stakeholders within and beyond Asia’s cities have potentially very important roles and responsibilities in advancing the urban food agenda in emerging Asia.

National government entities have important roles to play in support of proactive and well-designed food system interventions at the city level. Many city-level actions in the food space will need to be enabled and guided by national laws, regulations, standards, and plans. Individual cities can be creative in how they apply these to best fit local circumstances, but individual cities cannot always be left to act on their own as their food and agriculture systems are still part of a national whole. National rules, regulations, or administrative procedures that are outdated or lack clarity may inhibit effective city-level action in some cases, for example, affecting whether urban farming can be promoted in city spaces. National-level data collection may be critical for cities to make informed decisions relating to the food system. National data on the loss of periurban cropland and its contributions to food supply and good nutrition, for example, would help both cities and higher-level authorities intervene appropriately and coherently. Some city-level interventions may not be possible without financial support from higher levels of government. Financial resources, either from national programs or provided on a competitive basis, may be needed to enhance city-level action. National government agencies can also play important roles where initiatives extend across multiple jurisdictions, for example, involving multiple municipal and rural authorities in multiple surrounding provinces or agricultural clusters around a big city.
Multicity or “translocal” networks can play a vital role in raising the profile of urban food problems and opportunities by increasing awareness of them among city leaders and fostering experience and resource sharing. Multicity networks include those already dedicated to food matters (such as the network of Milan Urban Food Policy Pact cities), those aiming to promote the application of “smart city” principles (such as the ASEAN Smart City network), and those more generally supporting sustainable urban development (such as Local Governments for Sustainability [ICLEI] and the C40 Cities network). Those mentioned here are international and regional networks, yet it will also be beneficial to utilize national networks of cities or municipal leaders to strengthen awareness and experience sharing on food-related problems, opportunities, and interventions.

It will take broad mobilization by a diverse set of actors to meaningfully pursue the RICH food agenda, and so, examples of actions that specific groups of stakeholders can take to engage more proactively in urban food-related matters are offered below. These calls to action are offered for city leaders and policy makers, urban planning professionals, national ministries (such as ministries of agriculture, health, commerce, and environment), large food companies and food industry associations, civil society organizations, academic institutions (research and education), and international development partners.

**Urban planning professionals**

- Develop a vision of how food culture, food production, and food-related business can better contribute to the near- and long-term competitiveness and economic development goals of the city and how food-related commerce and hazards or costs will impact the city’s fiscal health, under different scenarios.
- Integrate considerations of food availability, affordability, and quality into assessments of horizontal and vertical urban expansion, paying particular attention to the need and scope for protecting periurban agricultural land. Quantify, at the local level, future competition among agricultural, residential, industrial, and other uses of land, water, and resources, and specify the associated policy options and tradeoffs for municipal and national decision makers.
- Explore alternative options to create space for urban agriculture, whether through the zoning of municipal public land, the designation of land for community gardens, or the availing of rooftops and other structures for agricultural production. Outline program and policy options for realizing this potential.
- Develop short- and longer-term strategic plans pertaining to the maintenance, upgrading, or conversion of community or traditional food markets, taking into account demographics, food shopping trends, current and future transportation requirements, and other factors. Position this assessment so that decisions can be made on a city-wide basis rather than for each traditional market, one by one.
- Integrate considerations of food waste, food packaging, and food-related effluents and pollution into municipal strategies for waste reduction or management and environmental management.
- Integrate considerations of food availability, affordability, quality, and culture into city-region plans to promote domestic and international tourism, where such potential exists.
Asian city leaders and policy makers

- Develop clear messaging and regularly communicate to constituents how food, food commerce, and dietary matters relate to the broader goals, problems, and opportunities facing the city (and its hinterland)—with emphasis on factors affecting resilience, inclusiveness, competitiveness, and (human, environmental, and fiscal) health.
- Lead or empower others to lead a process of dialogue among key stakeholder groups to define priority areas for short- and medium-term city investment, facilitation, and advocacy, to foster healthier and more sustainable urban food systems.
- Advocate among national leaders and technical agencies to reform national laws and regulations and strengthen specific national guidelines to better enable or facilitate actions at the city-region level.
- Develop or strengthen the institutional arrangements for improved coherence of food-related policies and for improved coordination of food-related initiatives in the city-region. This may involve a combination of temporary committees and more permanent structures.
- Allocate sufficient resources for public investments and institutional operating costs to effectively pursue food system opportunities and manage the food system risks deemed to be most significant for the city-region. Monitor the (cost-) effectiveness of these expenditures and make adjustments as needed.
- Use public investments and programs to leverage private investment and incentivize other activities that will strengthen food system capacities and improve food-related outcomes.
- Participate in multicity global, regional, and national networks that provide learning and experience sharing opportunities relating to urban food policy and good practices.

National technical ministries—notably of agriculture, health, commerce, and environment

- Update regulatory frameworks in relation to agricultural land protection and tenure, land-use zoning, the commercialization and use of agricultural chemicals and veterinary drugs, and other rights and responsibilities pertaining to primary agricultural production.
- Quantify, at the national or subnational level, future competition among agricultural, residential, industrial, and other uses of urban and periurban land, water, and resources, and specify the associated policy options and tradeoffs for municipal and national decision makers.
- Update regulatory frameworks relating to freight, logistical services, and e-commerce, to reflect the specific needs and challenges of food distribution and logistics.
- Provide technical guidance for cities to apply risk-based approaches to the management of food safety, animal health, and environmental protection, and specifically to surveillance, assessment, regulatory enforcement, and risk communication.
- Make adaptations to sectoral censuses (farm, enterprise, and labor ones) and other national-level data gathering instruments to generate more and better information about urban food system realities.
- Develop national plans for public agricultural and food market infrastructure development (including wholesale markets) to enable city- or province-level initiatives to be assessed and financed as part of a cohesive national system of marketplaces (hierarchical or networked).
### Large food companies and food industry associations

- Participate in processes to assess and prioritize city-regional food system challenges and opportunities, and chart out longer-term goals and roadmaps for realizing them with an emphasis on improving the enabling environments in which food-related businesses operate.
- Play active roles in city-regional crisis response committees and for a convened to address biosecurity problems, food safety outbreaks, adverse weather events, or other shocks to the local food system, whenever these occur.
- Plan and participate in public-private initiatives to address urban food insecurity and promote affordable access to healthy foods, especially among poor and vulnerable groups.
- Organize joint action to strengthen food operator awareness of food safety risks, facilitate the adoption of good agricultural, manufacturing, and food handling practices, and support programs to improve food and pathogen traceability and transparency.
- Work with municipal units to develop a system of regulations, incentives, industry codes of practice, and support programs to reduce urban food waste and contribute to the local bioeconomy.
- Initiate and implement programs to improve the nutritional profile of processed foods and beverages through product reformulation, new product development, or other means. Collaborate with city and national government entities on programs to improve the nutritional profile of foods consumed in school, enterprise, and other institutional canteens.
- Partner with municipal authorities and stakeholders to develop agrofood innovation hubs, horticultural parks, and other venues to test and apply emerging technologies and address emerging risks. In larger cities and regional hubs, collaborate with local universities or others to create agrofood incubators or accelerators for businesses and social enterprises.

### Academic organizations (research and education)

- Undertake and disseminate research addressing knowledge gaps and emerging trends relating to the structure and performance of food systems, consumer perceptions and behavior, food and nutritional security, food system risks and other matters relating to Asian urban food systems.
- Undertake evaluation and impact assessments on urban food policies and programs and recommend measures to improve targeting, cost-effectiveness, and equitable outcomes.
- Train the next generation of agrofood entrepreneurs and managers/technicians in sustainable food production and distribution systems.
- Assist national and municipal governments in designing advocacy programs and other communications to bring about behavior changes among farmers, consumers, food vendors, and others.

### International development partners

- Facilitate city-level multistakeholder dialogues leading to priority-setting, strategic plans, and investment or program planning pertaining to food systems.
- Help strengthen the empirical basis for food-related decision making by cities by commissioning or cost-sharing consumer and other stakeholder surveys, food and nutritional security analyses, environmental and food safety risk assessments and other diagnostic work.
- Support multiplicity networks and other modes of knowledge management for the sharing of experiences and lessons on “what works” and “what doesn’t” in terms of cost interventions.
- Assist individual cities to (i) integrate food system matters into their broader approaches and institutions for municipal governance, (ii) undertake feasibility studies and eventually finance public investments supporting (peri)urban food production and market infrastructure, and (iii) implement other programs requiring regulatory capacity building or stakeholder behavior changes from farm to urban fork.
Civil society organizations

- Participate in processes to assess and prioritize city-regional food system challenges and opportunities, and chart out longer-term goals and roadmaps for realizing them with an emphasis on consumer and environmental protection, and the interests of poor and vulnerable stakeholders in the urban food system.

- Advocate for the rights of urban and periurban farmers and farmland protection, providing legal support when necessary.

- Advocate for the protection of urban consumers, including school children, from food-related fraud or misrepresentation, food safety mismanagement, food crisis profiteering, and more, providing legal support when needed.

- Advocate for the rights and safe working conditions of food microenterprises and market and street food vendors, and facilitate programs to improve the working conditions and operating practices of such entities.

- Assist municipal and national authorities and stakeholders to implement targeted programs that address food insecurity, low-quality diets, and unsafe food in low-income neighborhoods and informal settlements within cities.
CONTEXT

Well-functioning food systems are a critical part of the economy, identity, and human and environmental health of Asian cities. Given the importance of food in relation to leading municipal concerns and priorities, including those relating to fiscal and economic strength, job growth and innovation, greenness, safety, resilience, and livability, urban food systems are in fact a defining feature of Asia’s dynamic cities. Healthy and sustainable urban food systems should therefore be a mainstream topic in urban planning and policy, and one that is integrated into Asian platforms for promoting “smart cities.”

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1 Emerging Asia in this context includes low- and middle-income countries (LMICs) in South and Southeast Asia, plus China and Mongolia.
2 A new Association of Southeast Asian Nations (ASEAN) region “smart cities” initiative has a conceptual framework involving six pillars, denoting important aspirations. These pillars relate to civic and social development, health and well-being, safety and security, quality of the environment, built infrastructure, and industry and innovation. Food is not explicitly referenced in this framework, yet it arguably has an important function in each of the six pillars.
However, in much of emerging Asia food has been an urban policy and governance blind spot. Food-related matters have rarely been an area of urban policy focus and typically feature little in urban strategic, spatial, or economic planning. More often than not, urban food system issues are addressed in a piecemeal and reactive fashion. Urban food system governance is an afterthought: different municipal government departments typically address the symptoms of food system problems independently, without coordination. While urban Asia has rightfully gained a reputation for innovation in many fields, in relation to urban food policy, the region is lagging, badly, behind other regions. Of the 209 international cities that have signed on to the Milan Urban Food Policy Pact, making commitments to mainstream sustainable food system measures in urban governance and policy, only three are in South Asia (Colombo, New Delhi, and Pune) and there are none in Southeast Asia. China is better represented with four signatory cities (Beijing, Chongqing, Guangzhou, and Shanghai).

Emerging Asia’s limited and lagging attention to urban food policy and governance can be explained by two major institutional factors:

- **First, across Asia, ministries of agriculture have long dominated food policy design and implementation.** Their mandate has generally focused on primary farm production, rural development, and national food security. Cities have rarely featured in their agricultural or natural resources planning and many of the topics of core concern in urban food systems have been areas of relative neglect, at least until quite recently. The areas of concern include a range of agroenvironmental issues and various problems and opportunities associated with food handling and logistics, food safety, food marketing, food entrepreneurship, poor diet quality, and food waste. The institutional separation of oversight over these areas partly explains the paradox that food is at once “everybody’s business” and “nobody’s business” in many cities. There is a disconnect between the evident need for coherent urban food strategies and policies on the one hand and existing policy and governance gaps on the other.

- **Second, city planners and decision makers in rapidly growing Asian cities are simultaneously addressing or coping with a very broad set of fundamental issues.** Many cities are encountering massive challenges associated with unplanned growth, including traffic congestion, air pollution, solid waste accumulation, underdeveloped physical infrastructure, and poor delivery of health, education, and other services (Deuskar et al. 2015, Ellis and Roberts 2015). All of these issues are highly visible and urban residents are demanding solutions. In contrast, many important food-related problems that are invisible because they are poorly monitored or measured are emerging steadily yet incrementally. As a result, they are not conjuring up a sense of urgency to the same degree that other city problems are. In some cases, this situation has given rise to a notion that urban food system problems can be dealt with later, once cities have become wealthier and have addressed other problems of growth and development considered more urgent. This posture is reminiscent of the longer-standing yet also misguided “grow now, clean up later” attitude to environmental protection that is sometimes encountered in economic development.

Yet, it is precisely the rapid pace of urbanization within emerging Asia that gives particular urgency to the mainstreaming of a food system perspective in urban planning and governance. The neglect or delay of urban food policies is setting up many Asian cities, unknowingly, for needless setbacks and missed opportunities on a very large scale. Cities are unintentionally adopting harmful policies, inadequately addressing emerging risks, and failing to leverage food systems to advance city goals further or do so more cost-effectively. Urban planning and policy decisions being made today and in the coming years will potentially have far-reaching impacts, including adverse consequences, for food providers and consumers. The decisions in question relate to matters as diverse as urban and periurban land-use zoning, the use of public space, investments in water, sanitation, and waste management systems, urban transportation and logistics, and public market infrastructure. Often, their impacts on the food system and various knock-on effects are not being assessed or given much weight in decision making. Meanwhile, many cities in the throes of rapid growth are having to contend with the vulnerabilities of low-income residents to food price shocks and chronic food

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3 The rapid and often uncontrolled conversion of periurban agricultural land for industrial or residential purposes may have far-reaching impacts on nutritional security, urban resilience, and the provision of environmental services.
and nutritional insecurity. Different interventions may be needed for cities’ vulnerable groups than have been traditionally applied in rural or remote areas.

At the same time, structural changes in Asian food systems are increasing the potential benefits of shaping urban food systems as well as the costs of inaction. In fact, the coronavirus disease 2019 (COVID-19) crisis has cast a stronger light on both the weaknesses and the promise of the region’s urban food systems:

- **Emerging economic opportunities are one consideration.** Cities and towns are the primary residences of Asia’s burgeoning middle classes whose demands for safer, more diverse, convenient, and higher-quality food are creating an enormous market opportunity. Cities already account for more than half of national food expenditures in emerging Asia and this share will rise sharply in the future. During the pandemic, an accelerated development of food e-commerce has been on display in some Asian cities. There is considerable scope for innovation and job creation in these spaces. A vibrant food economy can also help shape a city’s image and its attractiveness to investors, visitors, and talent.

- **Unforeseen or poorly managed risks are a second consideration.** Across middle-income Asia, cities are emerging as hotspots for the double burden of malnutrition, for the health and economic burdens of unsafe food and biosecurity risk, and a variety of environmental problems affecting or caused by food production and delivery systems.

Despite often facing mandate and resource constraints, municipalities and nearby administrative areas potentially have distinctive abilities or advantages to address complex food matters. Cities can sometimes be more nimble than central ministries in coordinating multisectoral interventions and experimenting with user-centered interventions. Cities can focus on how a challenge presents itself locally and use local configurations of actors and resources to respond. Cities have the power to shape the built environment and uses of urban space, to influence the fate of urban and periurban cropland and its supply of fresh produce to city residents, and to leverage choke points in the supply chain for potentially wide impact on production and consumption practices. For example, cities can leverage the power of institutional food procurement and of food business licensing and regulation. Cities can also leverage emerging information technologies, as has been seen in the recent explosive growth in food-based e-commerce in China, India, Indonesia, Singapore, and Thailand, and the growing application of various tracking technologies to support quality management and food safety.

While food policy and governance has thus far been a blind spot for many cities in emerging Asia, their administrators do not need to “fly blind.” Shifts toward a more proactive and integrative approach, motivated by the current requirement to pay attention to health, can draw on international experience in urban food policy. This experience comes from different regions, as well as from within Asia itself, including from cities such as Seoul, Tokyo, and Singapore. For cities in low- and middle-income Asia, some caution is needed when drawing lessons from contemporary experiences in high-income countries and cities, where the pace of change is now more modest in relation to demographics, the built environment, land-use patterns, diets, and food system structure. Lessons from the historical development and evolution of various institutional arrangements for food system governance could prove more relevant than would insights into how contemporary food problems are being addressed. There will be exceptions, of course, although the scale and complexity of problems and the speed of change occurring in emerging Asia’s urban food systems may be of a different order of magnitude. Addressing them will necessitate a process of shared learning and advice to occur within Asia, during the coming

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4 The scale of this emerging opportunity is unprecedented. Between 2015 and 2030, some 2.1 billion people in emerging Asia, and primarily in cities, are expected to enter the middle class, accounting for some 88 percent of the total global increment (Kharas 2017).

5 Close interaction among people and animals is leading Asian cities to serve as cross-contamination hubs. This, for example, has been the experience with avian influenza.

6 For example, growing levels of food waste is primarily an urban issue in Asia. Food-related waste and packaging feature prominently in overstretched urban waste management systems. Periurban agriculture and food processing is an important contributor to water pollution in some cities. Safe or unsafe wastewater is commonly used in urban agriculture and aquaculture. See, for example, Cassou et al. (2018).
years, as more and more cities test and experiment with policies, programs, and approaches to addressing serious urban food challenges.

AIMS AND AUDIENCES

The primary aims of this study are threefold. The first is to strengthen the rationale for developing a broad set of forward-looking urban food policies as an integral part of national food system development and food security strategy and policy development. The second aim of the study is to strengthen the business case for Asia’s emerging cities to systematically integrate food matters into their economic development and land-use planning, socioeconomic programs, and investments. The third is to provide strategic guidance on how these can be done effectively in the coming years—with the potential to “flatten the curve” or curb the progression of various food-related risks in emerging Asia’s cities.\(^7\)

The study is exploratory and preliminary and aims to be a steppingstone for perhaps a decade of upcoming collaborative work on strengthening the evidence and practices relating to urban food systems and policy in Asia. While the subject is now gaining increased attention, there still exist wide knowledge gaps pertaining to the evolving structure and performance of urban Asia’s food systems, the changing needs and behavior of its consumers and food system actors, and the efficacy or cost-effectiveness of pertinent regulatory or support measures in the distinctive contexts of rapidly growing Asian cities. For many if not most aspects of food demand and supply, statistical distinctions are not currently made between rural and (different kinds of) urban areas. The existing literature provides no basis for summarizing the status of urban food policy in the region and little documentation of specific city experience with varied interventions.\(^8\) Elements of this study were designed to address certain knowledge gaps, especially those relating to benchmarking or classifying the status of urban food policy in the region. The book identifies some of the most important knowledge gaps and recommends areas for future research and shared learning to strengthen the foundations of future action.

Realizing these aims involves the following:

- To strengthen the rationale for mainstreaming a food system perspective in urban policy, the study highlights the special or distinctive features of urban food systems, comparing them with rural or overall national food systems. It also makes note of some of the distinctive or more pronounced problems, risks, and opportunities associated with Asia’s urban food systems today and likely in the future. Generic national policies may not be equipped to address such issues.

- To strengthen the business case for integrating food matters into urban governance and development strategies, the book emphasizes the ways in which food and food system performance are critical to the (human and environmental) health, competitiveness, and resilience of Asian cities. It highlights the areas where cities have a comparative advantage to act over other levels of government and demonstrates—through examples—the relatively wide room for maneuver which is provided under prevailing laws, programs, and decentralization policies. The large gap between potential and actual urban food policy engagement is illustrated using city survey results.

- To provide at least preliminary strategic guidance to different types and sizes of cities in emerging Asia, the study draws upon documented examples of good practice from within and outside the region and provides an analysis of the current depth and breadth of urban food policy engagement in the region, based on a dedicated survey.

Thus, the study is concerned with questions regarding the “why” (why design urban food policies and why integrate and prioritize a food system perspective in urban planning and policy?), the “what” (what are the core elements

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\(^7\) Including, among others, those relating to food safety, animal health and disease, diet-related noncommunicable diseases, food loss and waste, and food consumption-related Greenhouse Gas (GHG) emissions.

\(^8\) There is a growing body of literature containing case studies of urban food governance arrangements and support programs from around the world. However, little of this has related to emerging Asia, perhaps in part due to its very limited involvement in the international networks dealing with this subject.
of and entry points for urban food policy?), the “how” (how can cities improve overall food system governance and employ a range of regulatory, fiscal, or support instruments to improve specific food system outcomes?), and the “where” (where are more progressive policy approaches to urban food systems being applied?).

**There are two primary audiences for this study.** They are (a) city leaders, policy makers, and planners (and their advisors) throughout emerging Asia, spanning small, medium, and large cities; and (b) national policy makers and practitioners pertaining to food systems, with these often being affiliated with ministries of agriculture, health, commerce, and, sometimes, environment. The secondary target audience for this study consists of (a) development partners and practitioners working on agrofood systems or urban development in the region and (b) the global network of practitioners and researchers working on matters of urban food system governance and policy.

**APPROACH AND METHODS**

The study involved multiple elements to frame this complex subject conceptually, identify and pool together existing evidence, and develop new knowledge. As will be noted below, the results from all of the study components are not synthesized in this document, but will be made available through other publications.

**Cross-section review of data and analysis**

Information and data pertaining to the state and dynamics of Asia’s urban food systems, problems, and opportunities is highly fragmented, as different dimensions are covered by multiple disciplines for different purposes. Many databases which include material relating to urban food demand, supply, distribution, or nutritional or other outcomes have not been fully analyzed with a distinctive spatial perspective relating to urbanization or to inform urban food policy making or investment. The study draws from existing material (and parallel analytical work using household and other surveys) to create a mosaic of the major drivers, dimensions, trends, and problems of Asia’s urban food systems.9 The analysis is then used to frame the major food system challenges and opportunities associated with these cities. While not comprehensive, this review of data and analysis is deemed sufficient to test the hypotheses that (a) there are distinctive patterns, problems, and opportunities associated with Asian urban food systems, compared with either rural or broader national ones; (b) important food-related matters can and do contribute to (or detract from) the performance, image, and resilience of Asian cities; and (c) there are likely to be lost opportunities for job growth and access to safe, nutritious food if cities merely adopt a passive or reactive approach to addressing food-related matters.

**Synthesis of examples of practice**

Both within Asia and globally there are many examples of emerging practices in urban food system policy, programming, and investment. Some of the experience is well-documented but much of it is not. As noted above, the limited involvement of South and Southeast Asian cities in some of the global food system–themed networks has probably contributed to their modest representation in the pool of well-documented initiatives. In contrast, several cities in Japan, China, and Korea are, along with Singapore, part of these networks and insights on their efforts and progress have been more widely shared. Elements of their experience—in relation to institutions and specific policies—may be instructive for other cities in the region, at least for informing future aspirations. Evidence was also sought about the nature and efficacy of interventions undertaken by cities in South and Southeast Asia.10 Good practices from other regions, from cities in both high- and

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9 Several background and working papers were generated as part of this study, including ones on urban and periurban agriculture, dietary health (looking at healthy food access and consumption in urban settings), informality, gender, spatial dimensions of urban food systems, urban food logistics, and various aspects of Singapore’s food policy experience.

10 A few examples in relation to periurban agriculture include the use of wastewater in aquatic production systems (Kolkata and Ho Chi Minh City), managing biosecurity risks (Hanoi and avian influenza), and the promotion of rooftop agriculture (Mumbai and Hyderabad). Many cities in the region, including Dhaka and Bangkok, have implemented initiatives to raise awareness and practices to improve the safety of street foods. Several are upgrading traditional wet markets or mobilizing private investment in food market infrastructure.
middle-income countries, were also reviewed for their potential relevance to Asian decision makers. Hence, based on existing printed and grey literature and crowdsourcing from practitioner and academic networks, the study team collected and synthesized an array of (good) practice examples, highlighting their major drivers, components, and implementation, their scalability challenges, and their success factors. Some of this research is summarized in this book, especially in Chapter 4. Other accompanying publications will provide a fuller elaboration of experiences, especially in relation to urban and periurban agriculture and the protection of agriculture and consumer-oriented interventions centered around improving diets and nutritional outcomes.

**Baseline survey of Asian cities on food policy status**

A survey was designed and implemented to benchmark the status of urban food policy and programs across a broad variety of cities. The survey sought to gauge perceptions of food-related challenges and opportunities, determine the mandates available to cities to engage with food-related matters, identify the main constraints to pursuing initiatives in this area, review the breadth and depth of current or recent food initiatives, and identify the range of stakeholder engagement in these initiatives. The survey sought to measure the degree to which each city’s food system engagement or approach is proactive (rather than reactive), integrative (rather than piecemeal or uncoordinated), and inclusive (rather than exclusive or simply top-down). The survey results provided a basis for classifying cities into four broad categories of food system engagement ranging from *food-smart* to *reactive*. Survey responses were received from 170 cities in 21 countries, representing a good cross section of cities of different sizes and levels of per capita income. The World Bank and the Food and Agriculture Organization of the United Nations (FAO) co-designed the Asian cities survey.

**In-depth information gathering in selected cities**

Seven cities in seven South and Southeast Asian countries were selected for more in-depth information gathering. These were Pune (India), Colombo (Sri Lanka), Huhumale (Maldives), Karachi (Pakistan), Davao (Philippines), Khon Kaen City (Thailand), and Surabaya (Indonesia). Information was gathered about their food consumption and expenditure patterns, their food supply chain structures and constraints, and the main institutions involved in implementing urban food policies and programs. Roundtable discussions were also organized with city leaders, food practitioners, and policy researchers to identify leading challenges and opportunities. The findings from these in-depth assessments, including supply chain diagnoses, stakeholder dialogues, and urban consumer surveys, will be summarized in a separate document by the FAO. The surveys were carried out by the FAO with support from field research partners including universities, consultants, Local Governments for Sustainability (ICLEI) South Asia and Southeast Asia offices, and the Thailand Development Research Institute.

**BOOK STRUCTURE**

The remainder of this book is structured as follows:

- Chapter 2 provides a brief synthesis of the major food-related challenges and opportunities that cities in emerging Asia face. It highlights pertinent megatrends relating to demographics, diets, and food system transformation and draws attention to a variety of pressure points, especially those relating to resource competition, dietary quality and safety, and the environment. This chapter ultimately addresses the “why” of progressive urban food policy in Asia.

- Chapter 3 summarizes the findings from the baseline survey of Asian cities, highlighting patterns in cities’ perceptions of food system problems and opportunities and in the actual breadth and depth of

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11 The implementation of this survey involved close collaboration between staff and consultants affiliated with the World Bank and FAO, together with representatives from national offices of ICLEI and from the Thailand Development Research Institute.
their food system engagement. A typology of cities derived from survey responses is presented—and will show that nearly three-fourths of the region’s cities are at a relatively early stage of concerted action on food system matters.

- Chapter 4 addresses how Asian cities can do more. It first elaborates on (good practice) approaches being used to improve urban food system governance and stakeholder dialogue and then examines the policy and program toolkit pertinent to influencing consumer behavior and outcomes, impacting food logistics and marketing, and influencing urban and periurban agriculture and the protection of agricultural land. This review makes reference to selected examples deemed relevant to a variety of Asian cities.

- Chapter 5 concludes by providing some recommendations for carrying the urban food agenda forward in the region. The chapter advocates for the region’s ambitious urban development goals to be matched by similarly ambitious aspirations for urban food systems. It advocates for urban leaders to aspire to “RICH” food systems that are (a) reliable, (b) inclusive, (c) competitive, and (d) healthy. Illustrative indicators for these aspirations are provided. The chapter briefly summarizes the comparative advantages that cities might leverage to advance the RICH food systems agenda. It then draws from the larger policy instrument menu laid out in Chapter 4 to identify a dozen areas in which a broad range of Asian cities can potentially bring out positive and sustainable change. Next, the chapter provides a call to action for different stakeholders. A final word is devoted to prevailing knowledge gaps and how they might be addressed in the years ahead.
This chapter draws upon available survey data and other evidence to depict the status and changing characteristics of urban food systems in emerging Asia as well as to illustrate the nature, scope, and scale of important challenges and opportunities. This is a large subject and one for which there are enormous knowledge and data gaps. Coverage has therefore been selective, and, on some topics, it has been difficult to draw out implications conclusively.

**URBAN MEGATRENDS: THE CONTEXT**

As has already been widely documented, Asia’s urbanization has been among the defining regional trends of the past decade. The rise of urban living has been dramatic both in its scope and speed. Between 1980 and 2015, the region’s urban population increased more than fourfold, from less than 500 million to 2.1 billion.
In 2015, Asia was at least 48 percent urban. Urban growth was especially notable in China. Over that same period, the share of people living in urban areas there increased from only 18 percent to 56 percent (National Bureau of Statistics of China 2016 in Xin and Li 2018). While much attention is given to the region’s megacities—that is, those with 10 million people or more—urban growth has been very rapid across all city size categories.

While urbanization rates have slowed somewhat, the number of people living in cities is expected to rise by nearly 50 percent by mid-century (UNDESA 2018). The United Nations has predicted that between 2018 and 2050, the number of urban dwellers might increase by an additional 416 million in India and by 255 million in China (UNDESA 2018). Between 2020 and 2050, the urban population is expected to rise by 20 percent in Eastern Asia, 58 percent in Southeast Asia, and 81 percent in South Asia (Figure 2.1).

Across Asia and beyond, urbanization is disrupting and reshaping food system activities in and around cities. Four megatrends account for many of the changes in food systems taking place and help inform why food systems are an increasing source of risk and opportunity for Asian cities.

**Megatrend 1: Unprecedented dependence on purchased food**

One change so obvious that it can be overlooked is that urbanization is making an unprecedented number of people dependent on purchased and prepared food. Although agriculture is not strictly synonymous with rural space, urbanization has partly been a manifestation of millions being pushed or pulled into nonfarm livelihoods. This phenomenon is giving rise to food environments that are significantly being shaped by commercial players and market forces, influenced as they have been by such things as trade liberalization, the built environment, and increasingly, digital technologies. The distancing of consumption from production is increasing the length and anonymity of supply chains catering to cities, a situation that is increasing the role and influence of intermediate actors involved in processing, preparing, packaging, transporting, delivering,
wholesaling, and retailing food at various stages of transformation—or in other words, the middle part of the supply chain. Dependence on purchased food, including from lengthening supply chains, is linking Asia’s cities and their destinies to new parts of the world and thrusting them into new kinds of relationships. Dependence on purchased food renders a city’s urban poor especially vulnerable to food price shocks and, as the current COVID-19 crisis has demonstrated, to supply chain disruptions. Dependence on purchased food is also reshaping food sector employment and the food economy. If employment in agriculture is declining in step with urbanization, activities in the areas of food processing, trading, and food services are on the rise—and morphing. Asian cities are having to contend with the many ramifications of this new and evolving reality.

**Megatrend 2: The rise of connected consumer classes with increasing disposable income**

Along with growing dependence on purchased food, urbanization is bringing newfound spending power and aspirations to a “consumer class” of vast proportions—and one that is increasingly ‘connected’ through digital technologies. Asia Pacific is anticipated to see its consumer class, defined as people whose households earn between US$11 and US$110 per day (2011 purchasing power parity [PPP]), more than double from 1.38 billion in 2015 to 3.49 billion in 2030, accounting for nearly 90 percent of the global increase in the consumer class over this period (Kharas 2017). Both incomes and expectations—in relation to food and many other things—are rising as urban populations are engaging in more lucrative forms of employment, mostly outside the farm sector, and being exposed to what disposable income can buy. The digitization of social and economic activity is no doubt feeding aspirations by amplifying information flows and creating new product and business model possibilities. Growing numbers of urban Asian consumers are now willing to pay premiums for products they believe to be safer, healthier, better for the environment, more ethical, or more aligned with their values in some way. While expanding, however, the consumer class is leaving many millions of urban Asians behind.

**Megatrend 3: The urbanization of poverty**

As urbanization progresses, poverty is partly shifting to cities, where it is shaping the lives of millions. Within Asia, poverty remains predominantly rural, and before the COVID-19 pandemic, extreme poverty was rapidly declining across both urban and rural settings in the region. Still, in 2013, approximately 350 million people lived on less than US$3.20 per day (2011 PPP) in East Asia and the Pacific, as did 919 million in South Asia (World Bank PovcalNet 2020). Poverty has been declining at a much slower pace in urban areas than in rural ones. As a result, poverty is urbanizing, although the pattern varies by country. Whereas in 1990, about 15.5 percent of Asia’s poor people lived in cities, nearly 22 percent did in 2008 (using US$1.25 per day in 2005 PPP) (Mathur 2013). Moreover, the urbanization of poverty has been outpacing urbanization itself. Over the period 1990–2008, the urban share of poverty rose by about 40 percent while the rate of urbanization grew by about 13 percent (from 38 percent to 43 percent). Estimates of the urban-rural breakdown of poverty are not widely available for later years, but data from India, China, and Indonesia point to this pattern possibly starting to level off (Figure 2.2). That said, it is possible that the urbanization of poverty remains more dynamic in some countries, as well as in smaller cities where the majority of urban growth is occurring. It also bears noting that the region’s smaller cities tend to face higher rates of poverty than do larger ones (Lozano-Gracia et al. 2016 in Baker and Gadgil 2017).

Urban poverty has been noted for being more complex and multidimensional than rural poverty, reflecting more than a deficiency of income or consumption. Urban poverty has been described as involving vulnerability on account of inadequate access to land and housing, physical infrastructure and services, economic and livelihood sources, health and education facilities, social security networks, and a voice (Mathur 2013). In developing Asia specifically, urbanization has been accompanied by shelter deprivation, slum development, informality, at times a degradation of living conditions, and increasing risks due to climate change and exclusionary urban forms (Mathur 2013). Some of the high-density cities have been rated among the least livable based on multiple criteria. Hundreds of millions of people live in slums and slum-like conditions across the region, especially in China and India (Box 2.1).
Figure 2.2: National Poverty Count at US$3.20 per Day and Urban Share of Poverty in Selected Asian Countries, 1990–2016

Source: Based on PovcalNet 2020 data.
Note: India data not available for other years. Poverty rate is in 2011 PPP dollars.

Box 2.1: Asian cities are home to most of the world’s slum dwellers

According to the United Nations, a “slum household” consists of one or a group of individuals living under the same roof in an urban area, lacking one or more of the following five amenities: (a) durable housing, (b) sufficient living areas, (c) access to improved water, (d) access to improved sanitation facilities, and (e) secure tenure. According to this definition, Eastern, Southeast, and South Asia were home to 70 percent of the world’s slum dwellers in 2014. Of the three subregions, Eastern Asia had the highest count, with 252 million persons residing in slums, followed by South Asia, with 191 million, and Southeast Asia with 84 million (MDG Indicators 2019). China and India had the highest head counts, with 191 million and 98 million, respectively. Across the subregions, the proportion of urban residents living in slums varied between 22 percent (in Indonesia) and 63 percent (in Afghanistan).

Figure 2.3: Number and Proportion of Urban Residents Living in Slums in Selected Asian Countries, 2014

Source: Based on MDG Indicators 2019 data.
Meanwhile, urbanization is bringing about a new form of poverty that is widely transcending socioeconomic divides: time poverty. Urbanization is resulting in households having less time to prepare food but more money or opportunities to purchase prepared foods. Households’ time for food preparation is being reduced by higher rates of female employment outside the home, longer commute times, and among middle classes, higher opportunity costs of time. Many low-income residents of cities spend especially long hours in transit to earn a living.  

**Megatrend 4: The unplanned outward expansion of cities**

Urban Asia is expanding upward and outward on a wide scale and in a largely unplanned fashion. In low- and middle-income Asia, cities of all sizes are encroaching into their peripheries and widely altering physical and socioeconomic structures. This expansion of cities’ physical footprint, together with the urbanization of life implied by it, is tending to increase competition for every kind of resource—water, soil, land, people, and space being among some of the most prized among them—sometimes to the point of sowing conflict, notably over land. The expansion of Asian cities is also causing lines between rural and urban spaces to blur and affecting agricultural activities. This pattern has not been specific to big cities. In the Philippines, the conversion of agricultural land has been most extensive in the fringes of Metropolitan Manila, but the highest rates of conversion have been observed in the rapidly urbanizing regions of Calabarzon and Central Luzon (Regions IV-A and III) (Bravo 2017). In Western China, one-third of urban expansion between 1988 and 2009 was driven by the development of small towns (Schneider, Chang, and Paulsen 2014).

Much of the expansion taking place is being driven by market forces in a context of weak planning, reflecting both the public sector’s retreat and involvement. With limited capacity for development planning and regulatory enforcement, many cities are growing on a project-by-project basis. Many are being shaped by a preponderance of informal and often speculative transactions involving municipal authorities to varying degrees. Yet unregulated and unplanned construction at the outer edges of cities has also been actively, if sometimes unwittingly, fueled by municipal investments and policies as much as a lack thereof. In China, a phenomenon known as “land finance” has been a driving force behind farmland conversion in and around cities. In other contexts, standards and incentives put in place to increase city density have unwittingly contributed to outward urban expansion. This has worked by bringing about the development of unaffordable housing in well-serviced locations and pushing more people into informal settlements. In many parts of the region, public players have also been known to actively leverage development for personal, private, or even a public agency’s gain. Regardless of the drivers, the expansion of Asian cities is redrawing margins separating urban and rural spaces and, among other things, bringing food production increasingly into urban Asia’s field of influence. The paradigm in which cities see themselves as consumers of food products strictly from rural spaces is becoming outdated.

**REALITIES AND RESPONSES OF URBAN ASIA’S FOOD SYSTEMS**

The region’s demographic, social, and economic dynamism evident in the megatrends described above can be seen in the evolution of its markets and on its plates. How people shop and eat, what they consume, and where it comes from is changing in fairly dramatic ways and not always in directions expected or fully appreciated by those planning changes in cityscapes. These responses of the food system are seen in the functioning of markets, production of food, and changes in consumption.

**Market trends**

The food economy is a dynamic and growing part of Asian cities’ economies with food wholesale and retail formats becoming more diverse. New forms of food retail are emerging along with urban residents’ growing

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14 According to the TomTom Traffic Index 2020, residents of Manila spent the equivalent of ten days per year in traffic jams in 2019. In Bangkok, Jakarta, and several major Indian cities, including Mumbai and New Delhi, the time spent in traffic jams approximated eight days the same year.

15 It has not been uncommon for authorities to collude with private parties and engage in rent-seeking behavior. In India, Vietnam, and elsewhere, there have been reports of both public and private actors hoarding active or abandoned farmland in anticipation of land values rising in cities’ peripheries (Ballaney et al. 2013 in Mahendra and Seto 2019).
demand for safety and convenience and, in some markets, the possibility of e-commerce. Urban food retail is also being reshaped by growing demand for prepared foods and meals as urban forms of employment leave many households with less time for shopping and cooking and less time at home. For example, the urban food services subsector is rapidly developing as out-of-home eating gains ground.

Urban populations are being served by a growing network of chain stores with national or international reach. Some countries like Vietnam have seen homegrown brands of modern retail chain stores take off. In Vietnam, national brands of convenience stores have risen to the challenge of competing with transnational chains and, so far, have been gaining ground. Vinmart+, for example, had over 1,700 outlets across Vietnam in 2019 and planned to have 4,000 by the end of 2020 (Deloitte 2020). Like their transnational counterparts, national players like VinCommerce, Saigon Coop, and others were being swept in a race to merge with or acquire their competition. While this may be fueling the trend toward retail market concentration, it is also checking the market power of transnational chain stores, which, at least in urban Vietnam, are sometimes struggling to meet their target expansion plans and in some cases exiting (Deloitte 2020).

Yet in many countries, supermarket penetration is still modest and independent retail outlets live on. While experiencing a high growth rate in sales, supermarkets and hypermarkets still account for less than 10 percent of food retail in India and Vietnam overall, although their share is higher than this in certain cities. Supermarkets and “modern” convenience stores account for somewhat larger shares in Indonesia, the Philippines, and China, yet traditional outlets remain dominant (Figure 2.4). In the Philippines, small independent shops, which are generally family-owned, accounted for 68 percent of grocery sales in 2018, down only 5 percent compared to five years prior. In India and Indonesia, over 80 percent of overall grocery shopping was still carried out at small independent grocery stores in 2018, according to Euromonitor data (Tani 2019). In many countries, shopping at supermarkets is predominantly for packaged foods and confectionary items, while fresh products—fruits and vegetables, meat, fish, and eggs—continue to be bought primarily at traditional neighborhood wet markets. For example, the share of wet markets in fresh product sales was recently estimated at 80 percent in Ho Chi Minh City and 90 percent in Hanoi. Minot et al. (2015) found a similar dominance of wet markets and small stores in fresh product sales in major Indonesian cities.

Figure 2.4: Penetration of Modern Retail in Selected Asian (and Comparator) Countries, 2015

Source: DBS Group Research 2015.
Note: M = modern market share; T = traditional market share.

As of 2019 there were an estimated 1.4 million mom-and-pop stores and 9,000 wet markets operating across Vietnam (Deloitte 2020; Nguyen 2019).
Meanwhile, “traditional” food retail has been far from static and the sector is in various stages of modernization—or hybridization. The continued dominance of traditional stores has not kept the so-called traditional retail sector from adapting to the times. Most of these stores are becoming important nodes in the long, modern supply chains that are conduits for a range of electronics, consumer goods, and food products. Many, for example, are giving consumers access to mobile phone, wi-fi, and banking services and in the food department, processed convenience products. Traditional stores’ approaches to sourcing are also evolving in some cases. Some small stores, for example, are cutting out middlemen and local distributors and relying instead on new third-party platforms, whose emergence is enabling distant suppliers and retailers to connect more directly than before.

Informality is a defining feature of urban Asian food marketing systems, including formal ones. While particularly high among low-income populations, reliance on the informal food sector persists across urban Asia’s socioeconomic strata. The lines separating formal from informal channels are also far more blurred than they are often assumed to be. In many cities of Asia, formal retailers are conduits for food processed in the informal sector. Similarly, street food remains a central part of urban life across the region and though widely fraught with the challenges of informality, it participates in the mainstream economy. For example, it is a common and accepted presence in mall spaces, festivals, and exhibitions promoting city culture. Hence, while the illustrative urban food system sketched in Figure 2.5 depicts formal and informal elements distinctly, in many cities, these subsystems strongly overlap. For example, produce from agribusinesses as well as from

Figure 2.5: Modern and Traditional Elements of Urban Food Systems: An Illustrative Sketch

unorganized smallholder farmers ends up in both modern and traditional retail channels. And small kiosks are typically the primary means through which the urban poor and near-poor access packaged foods, snacks, and beverages produced both by large companies and microenterprises.

Looking further upstream, urban agriculture accounts for a relatively small share of overall food supply although its significance is much greater once periurban production is factored in. One study of 15 developing or transition countries (in and out of Asia) found that food production within cities (using national definitions of urban space) contributed to roughly 5–15 percent of national production in the late 1990s to early 2000s timeframe (Zezza and Tasciotti 2010). Estimates for the Asian countries covered ranged from 7–8 percent in Bangladesh and Vietnam (in 2000 and 1998 respectively), to 13–15 percent in Nepal and Indonesia (in 2003 and 2000 respectively). For specific cities, the share of food supplied by urban farms may be much higher, even if production has declined or moved away from city centers. The greater Shanghai metropolitan area reportedly produces 50 percent of the city’s food, a considerable though declining share (WWF 2012). Hanoi has a similar level of self-sufficiency, although this is partly due to the city’s administrative merger with a mostly rural neighboring province. In Nepal, it has been reported that urban food is mainly produced in an intermediate zone located between 30 minutes and 2 hours away from the nearest market or 3–7 hours away from the nearest town (Briones 2017).

However, the rapid and uncontrolled outward growth of many Asian cities is making it increasingly difficult for many urban and periurban farms to continue operating. Outwardly expanding cities are eating into prime cropland and sometimes disturbing ecosystems that support farming activities. The expansion of food trade has also possibly contributed to lessening dependence on local farm products in many contexts. Urban expansion has already been a key driver of cropland loss in Asia. In China, nearly 4.3 million hectares of cropland were converted into built-up land between 1987 and 2010, accounting for nearly 44 percent of total cropland loss over that period (Ju et al. 2018). The encroachment of settlements into cropland—and other natural landscapes such as forests, wetlands, and grasslands—has been occurring in and around cities all over the region and beyond. Across 50 global cities, a study which used satellite data to examine land-use changes found that between 1985 and 2010, urban expansion was strongly associated with a loss of cropland along with grassland and forest (Bagan and Yamagata 2014). Figure 2.6 shows changes in settlements and cropland in the Asian cities included in that study. In China’s now highly urbanized Beijing-Tianjin-Hebei region, approximately three-quarters (74 percent) of all new urban land was converted from farmland in the 1990–2000 period (Tan et al. 2005 in Xin and Li 2018).

Going forward, urban encroachment into urban and periurban cropland is expected to continue and represents an existential threat to local food supply. By 2030, over a period of 30 years (that is, relative to 2005), settlements are expected to displace an additional 4.8 million hectares of cropland in China, primarily at the expense of periurban agricultural land (Xin and Li 2018).

Figure 2.6: Changes in Settlements and Cropland in Selected Asian Countries, Specified Years

<table>
<thead>
<tr>
<th>Country</th>
<th>Settlement</th>
<th>Cropland Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tokyo 87-11</td>
<td>176</td>
<td>189</td>
</tr>
<tr>
<td>Shanghai 87-05</td>
<td>100</td>
<td>80</td>
</tr>
<tr>
<td>Beijing 84-10</td>
<td>38</td>
<td>48</td>
</tr>
<tr>
<td>Kolkata 00-07</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td>Seoul 89-06</td>
<td>90</td>
<td>8</td>
</tr>
<tr>
<td>Delhi 99-09</td>
<td>3</td>
<td>-14</td>
</tr>
<tr>
<td>Tianjin 86-09</td>
<td>34</td>
<td>-40</td>
</tr>
<tr>
<td>Bangkok 88-06</td>
<td>98</td>
<td>-50</td>
</tr>
</tbody>
</table>

Source: Based on data from Bagan and Yamagata 2014.
Note: Changes are net.
a 2000 baseline), Asia will potentially have lost 16–21 million hectares of cropland due to urban expansion, according to a major study by Bren D’Amour et al. (2016). The conversion of agricultural land to nonagricultural uses is typically understood to be irreversible. While the share of periurban cropland that is threatened by urban expansion is small in relation to total cropland, in the range of 2.9–3.7 percent for Asia overall, in many cases this (now) periurban land is especially fertile, it being one of the reasons why cities emerged in these locales in the first place. Periurban agriculture has also increasingly involved production of higher value foods, thus magnifying the value of production derived there. Rates of periurban land conversion are generally higher in Asia than elsewhere. And some countries in the region, among them China and India, may still experience very substantial losses of cropland in absolute or relative terms.

At the same time, poorly managed animal husbandry, including backyard poultry, cattle, and pig rearing, and the operation of informal slaughterhouses poses a significant environmental and health risk in many cities. Riverside slaughtering in cities such as Kathmandu poses environmental and health risks. When livestock are kept and slaughtered in large numbers in proximity to humans, various health issues can surface relating to animal feces, noxious smells, and, most importantly, the transmission of pathogens and diseases such as influenza. The rearing of cattle and swine continues to be a significant activity within some Asian cities. While some cities indicate their gradual move further away from the city center (Thanapongtharm et al. 2016), household level production remains a reality, particularly in low-income areas (Ström et al. 2017). Small-scale operations are sometimes important sources of earnings for low-income women and households.

Overall, at the consumer level, food supply is generally becoming more ample and diverse. National calorie availability has increased tremendously and surpassed per capita daily needs, and some of the increase in available calories has come from a variety of non-cereal foods (Figure 2.7). Although these changes are unfolding at the national level, regional data on urban and rural food expenditures derived from household surveys point to higher absolute levels of total food spending among urban households (compared to rural ones), as well as higher relative levels of spending on nongrain items. Household expenditure data also indicate

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17 The study assumes that an area equivalent to that occupied by urban agriculture at baseline will be maintained within the wider urban region.

18 In China, 8–9 million hectares of cropland could be overtaken by urbanization in the 2000–2030 timeframe (Bren d’Amour et al. 2016). A loss of cropland of this magnitude corresponds to a quarter of global cropland losses anticipated by 2030 due to urbanization. From a national perspective, it would amount to losing 5–6 percent of national cropland and fully 8–10 percent of its caloric output (relative to a 2000 baseline). In absolute terms, India is expected to experience the second largest losses of cropland to urbanization, globally, after China, in the 2000–2030 timeframe. While substantial, at 3.4 million hectares, or about 2 percent of its cropland in 2000, India’s loss of cropland is expected to be much smaller than China’s in both absolute and relative terms. Several smaller countries are expected to experience cropland losses that, while much smaller in absolute terms, will be even larger than China’s in relative ones. For example, Pakistan could lose 7.2–8.6 percent of its cropland, and Vietnam, 9.3–11.2 percent. In contrast, Indonesia may lose much less: in the order of half a million hectares or 1 percent of its cropland.
a clear trend toward diversification among urban households of various means—and in cities of various sizes. Figure 2.8 illustrates some of these trends with household food expenditure data from two major cities and two secondary cities in Vietnam.

As noted, one direction of diversification has involved an increase in out-of-home eating, a food expenditure category that has gained prominence across income groups. This trend is illustrated with urban data from Vietnam (Figure 2.8) and national data from the Philippines (Figure 2.9). In the Philippines, while the wealthiest households allocated more of their food budgets to out-of-home eating than lower-income households in 2015—almost one-quarter of it—out-of-home eating was also significant at nearly 10 percent, and growing faster, among the lowest-income households.
Consumption trends throughout most of Asia, hunger and undernutrition has been declining, both in rural and urban areas, although very significant problems of malnutrition remain. FAO (2018a) estimates that between 2005 and 2017, the number of people in the region consuming an inadequate level of calories fell from 650 million to just below 500 million, dropping the rate from nearly 18 percent to 11 percent. Yet, chronic hunger as well as poor dietary quality among children remain serious problems in much of the region as seen by stubbornly high rates of under-five stunting. While hunger and undernutrition have traditionally been viewed and approached as a rural phenomenon, urban rates of child stunting still exceed 20 percent in many countries of South and Southeast Asia (Figure 2.10).
It is possible that in some urban contexts, populations living in informal settlements face levels of malnutrition that sometimes rival or exceed those observed in rural settings. National figures tend to underrepresent the realities of those living in the informal settlements of cities. Nonetheless, the fragmented evidence available points to potentially significant malnutrition problems. In India, the significant decline in protein-energy malnutrition observed over the past decades at the national level is not evident in slum areas (again though, evidence is very thin and at this point dated). A study carried out using the Food Insecurity Experience Index in 38 slums in Delhi found about 45 percent of surveyed residents to be food insecure, though less than 1 percent were severely so (Joshi et al. 2019). FAO (2018a) cites United Nations Children’s Fund (UNICEF) data for South Asian countries to show that both at the top (5th quintile) and bottom (1st quintile) of the income spectrum, stunting rates are similar or higher in urban areas than in rural ones.

Dietary diversification toward healthy foods has not progressed far enough. In low- and middle-income Asia, the consumption of nearly all healthy foods and nutrients is suboptimal and a major risk factor for noncommunicable disease, disability, and premature death (Figure 2.11). Those beneficial foods and nutrients include fruits, vegetables, legumes, whole grains, nuts and seeds, calcium, fiber, and beneficial fatty acids. The only exception to this pattern is the intake of legumes in South Asia being adequate. A similar overall pattern exists in high-income Asia Pacific, the exception there being an adequate intake of omega-3 fatty acids (based on GBD 2017 Diet Collaborators and Bernabe 2019).

Urban food environments can be particularly challenging for poor residents of cities. Poor households still spend high proportions of their budgets on food—more than 50 percent in some cases (Ruel, Garrett, and Yosef 2017). Data from 2013 and 2014 show that food and drinking water accounted for about 43 percent of poor and very poor urban households’ average expenses in Nepal and the Philippines and over 50 percent of their expenses in Sri Lanka and Thailand (Boonyabancha and Kerr 2015). The prominence of food in their budgets

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Figure 2.10: Prevalence of Stunting in Children under Five in Urban and Rural Areas, Latest Year Available

Source: FAO 2018 abased on World Health Organization (WHO) data.

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19. It is known with a high degree of certainty that diets that help keep chronic disease at bay are ones that are rich in minimally processed, diverse, and nutritious plant-based foods. Fighting diet-related disease will mean delivering these.

makes the poorest urban residents particularly sensitive to income and food price shocks. Limited access to safe water, sanitation, and cooking fuel also constrains access to safe and nutritious food options, especially for slum dwellers (Box 2.2), while formal and informal safety nets often fail to protect the poorest of the urban poor. Anecdotal evidence suggests that producing food for own-consumption is not always an option for the most vulnerable of urban residents.

Box 2.2: Food environments may be particularly challenging for residents of cities’ informal settlements

Little is known about food security and dietary health challenges in slums specifically, but the potential for food access challenges is high. Key challenges include infant feeding practices, inadequate diet (low in healthy proteins and fats and essential micronutrients), and the impacts of poor sanitation and unsafe food on nutrient absorption (mediated by parasites and infections). In India, low diet quality has been linked to diets being dominated by a single staple cereal or starchy food, and increasingly, to their inclusion of high-calorie yet nutrient poor convenience foods. Parasites and infections are thought to be contracted at high rates in informal settlements as a result of exposure to unclean water and food, and unsanitary conditions generally impair absorption of nutrients. Low rates of exclusive breastfeeding during the first six months of life and appropriate complementary feeding practices may be linked to many mothers engaging in out-of-home work in the informal sector, where labor laws meant to provide mothers leave or flexible working arrangements do not apply. It is also possible that traditional beliefs and a lack of dietary health knowledge compound these factors for low-resource communities.

For many poor residents of cities, adequate diets are unaffordable.\textsuperscript{21} It is often (though not always) the case that urban households have to pay more for adequate diets than rural ones. Urban households, on average, have larger food budgets, in absolute terms, than rural ones, putting many in a position to afford more costly diets. This is the case in Sri Lanka, for example, where the share of households unable to afford nutritionally adequate diets is lower in urban areas than in nonurban ones (WFP 2019b).\textsuperscript{22} However, urban households that

\begin{itemize}
  \item Low fruit
  \item Low vegetables
  \item Low legumes
  \item Low whole grains
  \item Low nuts and seeds
  \item High red meat
  \item High processed meat
  \item High sugar-sweetened beverages
  \item Low calcium
  \item Low omega-3
  \item Low PUFA
  \item High trans fats
  \item High sodium
\end{itemize}

\textbf{Source:} GBD 2017 Diet Collaborators and Bernabe 2019.

\textbf{Note:} PUFA = Polyunsaturated Fatty Acids.
Lowest cost diets available locally were compared with the household food expenditure curve for each region, disaggregated by urban and rural areas. Median household food expenditures were standardized for a five-person household.

However, in urbanized food environments higher incomes are not solving dietary health problems. It is important to note that economic access to nutritious diets is a challenge for many residents of cities and not just the poorest. And as discussed below, urbanized food environments may even be among the emerging risk factors with respect to dietary health. As the wealth of nations tends to concentrate in cities, it can be difficult to disentangle the effects of income from other urban influences on diets and health. And, confoundingly, the urbanization of lifestyles and food environments is gaining ground in rural settings too. Yet whether income or other factors are the cause, what do not have larger food budgets, because they are poor, can be at a particular disadvantage—potentially even compared to their (low-income) rural counterparts. Moreover, because urban areas are highly populous, even a minority of urban households in this situation can represent a large “case load” of food and nutritional insecurity. This scenario is illustrated with data from the Philippines, drawing from and expanding on the World Food Programme’s (WFP’s) Fill the Nutrient Gap analysis (2019) (Box 2.3).

Box 2.3: For poor residents of Philippine cities, adequate diets are often unaffordable

In the Philippines, according to the WFP’s analysis, almost all households would have been able to afford a calorically adequate diet in 2015, but one-third would not have been able to afford a nutritionally adequate diet—not even the one available to residents at least cost, locally (based on actual levels of food spending). In 2015, about 24 percent of urban households would have been unable to afford a nutritious diet versus 39 percent of rural ones. Yet, with the urban population being about double that of rural, the absolute number of households confronted with non-affordability would have been similar. In Metro Manila, 35 percent of households would not have been able to afford a nutritious diet while only 1 percent would have found a calorically adequate diet unaffordable.

In most provinces of the Philippines, adequate diets generally sell at a premium in urban areas compared to rural ones, though dietary cost patterns vary considerably across regions. An expansion of the analysis carried out by the WFP using 2015 data shows that the average premium that urban populations faced, across regions, was 15 percent for calorically adequate diets (the least-cost version available locally), and 10 percent for nutritionally adequate ones. Compared to their rural counterparts across regions, residents of Metro Manila would have needed to pay a 32 percent premium to purchase enough calories and a 69 percent premium to access a nutritionally adequate diet (again, buying the foods that meet requirements at least cost).

Urban premiums can be a particular challenge for the urban poor. In the Philippines, as elsewhere, the average urban household can and does spend more on food than its rural counterpart. In 2015, the average household in Metro Manila spent more than double on food (PHP 370) than the average household in rural Mindanao (PHP 151). However, the analysis found that a person employed in the formal sector and earning the national minimum wage would not generally be able to afford a nutritious diet in urban areas. To put this in perspective, 4 million people live in informal settlements in Metro Manila alone, and millions more residents of cities earn far less than the formal sector minimum wage.

A lack of economic access to nutritious diets among low-income residents of cities also impedes their health and economic prospects. The analysis generally found the non-affordability of nutritious diets to be strongly correlated with rates of stunting among children under five years of age at the regional level. Although this correlation does not confirm causation, it suggests that unaffordability may contribute to stunting in children under five, including in urban areas. In Metro Manila alone, some 355,000 children were affected. Meanwhile, the National Capital Region is the region of the Philippines with the highest rates of overweight children and adults (6 percent of children under five are overweight, 37 percent of adults are overweight or obese, and 10 percent of adults are obese).

Source: Based on WFP 2019a.

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23 Lowest cost diets available locally were compared with the household food expenditure curve for each region, disaggregated by urban and rural areas. Median household food expenditures were standardized for a five-person household.

24 These numbers are the (population-weighted) averages of all regional urban premiums—for calorically and nutritionally adequate diets, respectively, that is, diets available at least cost locally, as modeled by the WFP. For Metro Manila, which is strictly urban, the premium is calculated by comparing the cost of diet there to the (population-weighted) average cost of rural diets across all regions. Because of differences across regions, the calculation method matters. If the urban premium is calculated by comparing just two numbers, the average costs of urban diets to the average cost of rural diets, for all regions, including Metro Manila, the urban premium is 16 percent for adequate calories and 20 percent for adequate nutrition. In other words, the first set of premiums is the average of differences, and the second, the difference of averages.
can be said is that higher incomes (associated with urban settings) do not automatically lead to improvements in diets. This scenario is illustrated with evidence from India, and again the Philippines (Box 2.4).

**Box 2.4: When wealth is not health: dietary evidence from India and the Philippines**

Dietary gap analysis carried out in India and the Philippines shows that dietary diversity increases with wealth but that the consumption of fruits and vegetables is low regardless of households’ economic status or setting. In India, World Bank (2020) indicates, for example, that greater wealth is associated with lower underconsumption of fruits and vegetables (benchmarked against nationally recommended intake levels) but that even high-income households are generally consuming highly inadequate levels of fruits and vegetables, especially leafy greens. And overall, urban households are not doing much better than rural ones in that respect (Figure 2.12). At the same time, wealth is associated with greater and sometimes excessive consumption of less-healthy food groups.25

**Figure 2.12: Food Consumption of Indian Households by Income Level and Place of Residence, 2011**

![Figure 2.12: Food Consumption of Indian Households by Income Level and Place of Residence, 2011](image)


In the Philippines, the WFP’s Fill the Nutrient Gap analysis shows that individuals in the richest wealth quintile consume almost six times as much meat and five times as much poultry as those in the poorest wealth quintile, but less vegetables than those in the poorest quintile.26 The unfavorable relationship between wealth and healthy dietary patterns in this case is also on display at the national level, over time. Between 1978 and 2013, the country as a whole saw its per capita consumption of fruits and vegetables decline by a full 61 percent and 21 percent, respectively, while its consumption of meat climbed by an alarming 227 percent. This shift over time and these differences among socioeconomic strata both point to the importance of dietary preferences in shaping consumption choices.

25 Of note, the gaps between actual and recommended intake levels are generally more contrasted across wealth levels (between the richest and poorest 20 percent) than they are across places of residence (between urban and rural), as depicted by the longer lines in panel (a) compared to panel (b) in Figure 2.12. The analysis does not, however, break down how households in similar wealth strata compare across (urban and rural) settings.

26 According to the WFP’s diet optimization analysis, fruits and vegetables, including leafy greens, legumes, papayas, peppers, water spinach, carrots, avocado, and bananas, are actually the most affordable sources of many (though not all) micronutrients.
One worrisome form of dietary diversification in urban Asia has been higher consumption of ultraprocessed foods, increasingly purveyed by chain stores, fast food restaurants, and small vendors. Both fresh and ultraprocessed convenience food categories are rapidly gaining ground and replacing starchy staples and sometimes other food groups. Ultraprocessed foods are foods that have been formulated mostly or entirely from substances that have been derived from foods (that is, ingredients like oils, fats, starches, sugars, bulkers, sweeteners, sensory enhancers, flavors, colors, and other additives, combined or not with whole foods). Multiple studies are pointing to a strong positive association between the consumption of ultraprocessed foods and all-cause mortality (Blanco-Rojo et al. 2019; Rico-Campa et al. 2019; Schnabel et al. 2019). Though not all negative, the extensive industrial processing of food has a general tendency to strip whole foods of their nutritional value while increasing their energy density and propensity to be overconsumed, and often transforms them into concoctions of potentially harmful ingredients in the process. Frequently favored for their taste, convenience, affordability, marketing claims, and perceived safety, ultraprocessed foods could become, if they are not already, among the region’s leading health risks.

Asia is widely becoming awash in a variety of ultraprocessed foods high in fat, salt, and glycemic load—and the aggressive marketing of these. Sales volumes of nonessential foods and sugar-sweetened beverages are rising (at country level) across the region, (Figure 2.14) (Popkin, Corvalan, and Grummer-Strawn 2019). Between 2000 and 2013, sales progressed the fastest in the region’s middle-income countries, according to a 2016 study examining the penetration of ultraprocessed foods in 12 low-, middle-, and high-income Asian countries (Baker and Friel 2016). In terms of products, carbonated soft drinks were the leading category among the seven identified by the study as those which are contributing the most significantly to sugar, salt, and fat consumption in diets. In terms of distribution channels, supermarkets, hypermarkets, and convenience stores have played an increasingly dominant role, while food services undertaken by multinational and local companies, are playing a growing role.

Figure 2.13: Per Capita Consumption of Fruits, Vegetables, and Meat in the Philippines, 1978–2013

Note: Meat includes poultry.

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27 The study is based on Euromonitor International 2014 data for four lower-middle-income, three upper-middle-income, and five high-income Asian countries (India, the Philippines, Vietnam, and Indonesia; China, Malaysia, and Thailand; and Australia, New Zealand, Singapore, the Republic of Korea, and Japan). It examines trends in ultraprocessed food consumption, packaged food retail distribution channels, the market share held by transnational food and beverage corporations relative to domestic firms, and market concentration as seen through the market power held by the four leading firms in each segment.
More ambiguous forms of diversification include the rise in consumption of animal source foods as well as the decline in the range of foods consumed traditionally. Animal source foods are rising very rapidly in certain parts of urban Asia, and despite associated setbacks ranging from zoonotic outbreaks to foodborne illness and uncontrolled pollution, their consumption is still trending upward. The growth in consumption of animal source foods has been the most dramatic in China, although also quite significant in urban Vietnam, Indonesia, the Philippines, and Thailand. Animal source foods are no doubt enriching Asian diets in nutritionally important ways, particularly where their consumption is rising among populations deficient in protein, iron, calcium, and other essential nutrients. However, this increase is in several regards a suboptimal approach to meeting unmet dietary needs, factoring in the dietary health, food safety, zoonotic, welfare, climate, and environmental risks they needlessly introduce.

Also equivocal are the benefits of urban Asian diets becoming increasingly rice- and wheat-centric, and an assortment of traditional staples marginalized. It bears noting that even as urban diets are diversifying, they are also losing some of their “range” and sometimes losing healthy foods in the process. Urban encroachment into cropland around many cities is sometimes marginalizing local cereals, tubers, pulses, fruits and vegetables, or varieties thereof. And the variety introduced by food imports from near and far is also sometimes displacing traditional food cultures’ contributions to healthy forms of variety. It is possible that the net effect of this trend will depend less on the substitutions that are occurring than on the way staples are being prepared—and in particular, the extent of their industrial processing. Brown rice, white rice, rice noodles, rice vinegar, and packaged rice crackers may have less nutritional commonality than minimally processed rice and taro, as different as these staples are.

These changes in diets are sparking a growing range and scale of diet-related health problems across socioeconomic strata. Indeed, a range of diet-related chronic diseases are on the rise. Leading categories of these include cardiovascular disease, cancers, diabetes, and neurodegenerative diseases. The rise in overweight and obesity (high body mass index [BMI]), a risk factor, is commonly used as a proxy for the rise in chronic diseases attributable to unhealthy eating. Among urban adult women, its prevalence ranged from 5 percent in Timor-Leste to 60 percent in the Maldives during the 2010s (based on demographic and health survey [DHS] data) (Figure 2.15). In several LMICs of Asia, the prevalence of overweight has overtaken that of underweight in the adult population. In urban populations specifically, this has already been the case in Cambodia, China, Indonesia, Myanmar, Maldives, and Pakistan (Figure 2.16).
While the rise of high BMI is not exclusive to urban areas, it may be tied to the urbanization of lifestyles. Dietary behaviors particularly at stake include excessive consumption of snacks and fast food (including from restaurants and street food hawkers), meat, and sweetened beverages. One review of 45 nationally representative studies on eight countries in Southeast Asia found that living in an urban environment was positively associated with obesity across age groups and genders (Angkurawaranon et al. 2014). High BMI is actually increasing faster in rural parts of Asia than in urban ones but urban Asia still has a higher rate of prevalence and a larger caseload than rural Asia. In other terms, although the urban-rural BMI gap is closing, urban Asia is still more overweight (Figure 2.17).
In both high- and low-income settings, urbanized food environments and eating patterns are being reshaped by commercial forces, some of which are forging unhealthy or obesogenic food environments. Among others, influences on commercial food landscapes of cities include increased openness to trade and foreign investment, connectivity, the morphing of spatial and economic organization of life (out-of-home work, longer commute times, and wider road widths), and the disturbance of periurban cropland and local foods by the outward expansion of cities. In particular, with their dense, time-poor, and purchased food–reliant populations, cities have been natural targets of commercial efforts to intensively market convenience food products and fast food services that have widely developed in less-than-healthy directions.

Paradoxically, when poor residents of cities gain greater economic access to food environments that are unhealthy or "obesogenic," their move out of poverty can backfire from a nutritional health perspective and lead to even worse dietary health outcomes. In slums of Manila, focus groups revealed a clear preference, when they could be economically accessed, for convenience and ready-to-eat foods, many of them unhealthy (WFP 2019a). In Colombia, greater access to obesogenic food environments potentially explains why participants in conditional cash transfer programs have been more likely to become overweight than nonparticipants, although this effect has not been found systematically (for example, it has not been observed in Mexico) (Forde et al. 2012; Velasquez 2016). Where it exists, this effect could be compounded by predispositions created by childhood malnutrition. The chronic undernutrition often experienced by those in greatest poverty can increase people's vulnerability to various health problems later in life, including to diet-related disease. It is notable, then, that the association between urban environments and obesity seems to be higher in Asian countries with lower per capita income (based on a review of studies on Southeast Asia, Angkurawaranon et al. 2014).

Meanwhile, food safety risk is rising along with the complexity of the product mix and food landscape. Urban food systems are introducing complexity and length into food supply chains, features associated with higher food safety risk. Despite the limited measurement of its impacts, unsafe food is also known to be taking an unnecessary toll on the health and economic prospects of cities' residents, with disproportionately large effects on children and poor households. Unsafe food is estimated to cost emerging Asia on the order of US $70 billion per year, just factoring in productivity losses from foodborne illness and the costs of treating such illness (Jaffee et al. 2019) (Figure 2.18).
Food matters are in fact at the heart of what makes Asian cities tick. In light of both enduring and emerging realities, urban food systems are relevant to many cities’ leading concerns and priorities. Those include commercial vibrance, job growth, attractiveness to investment, talent and innovation, resilience, social stability and safety, greenness and livability, and fiscal health. Despite the lack of adequate planning, the opportunities presented by the food system in urban environments are considerable and impact the health, dynamism, and attractiveness of cities as places to work, live, and invest in. Being aware of these opportunities and proactively taking actions to nurture them while reducing associated risk would therefore be the strategy cities need to take to leverage food systems to advance city goals.

Business development, job growth, and innovation

The urban food sector presents economic opportunities for a range of citizens. Often conflated with informal and agricultural employment, both areas of employment that youth and economic migrants wish to flee, the food sector is in fact full of economic promise, including for cities. The food sector is a major contributor to national income in advanced, services-dominated economies, and with economic development, its value addition tends to migrate downstream in the food supply chain. In Asia, by virtue of demographic and socioeconomic change alone, the urban food sector is all but assured steep growth.

Catering to the food needs and preferences of urbanizing populations may be among Asian cities’ major business and job creation opportunities. With more disposable income and soaring quality of life aspirations but less time for food preparation, urban Asia’s emerging middle classes represent a vast market for city businesses and workers to cater to and around which to innovate. Households are spending less of their income on food but absolute spending on food is rising. And looking forward, if the results of a 2019 survey of consumers in four of Vietnam’s largest and most economically dynamic cities are telling, food spending is far from saturated: between 21 percent and 35 percent of respondents indicated an intent to spend more on (high value added) food products in the future (Deloitte 2020). While supermarket chains catering to urban
Asia’s emerging consumer class have gained ground in Asian LMICs more slowly than expected, their market share is still expected to grow substantially over time, accompanying the rise of the middle class, its capacity for discretionary spending, and preferences for the various conveniences offered by so-called “modern” retail (Figure 2.19).

The changing circumstances and preferences of urban populations, coupled with the promise of information and communication technologies, also offer seemingly endless possibilities for food-related business innovation. A myriad of business models and services are experimenting with different ways of leveraging Asian societies’ newfound connectivity to make money by catering to urban consumers’ food preferences and needs. The eruption of food-based e-commerce in China and some of the region’s largest cities illustrates the opportunity. According to Google Trends, queries for online food delivery brands were 13 times higher in 2019 than in 2015 in Indonesia, 9 times higher in the Philippines, and 8 times higher in Thailand. In recent months, online food delivery has experienced explosive growth in major Asian cities due to COVID-19-related lockdowns and widespread restrictions on in-person restaurant eating. For example, in the first half of 2020, food delivery companies in Thailand reported double-digit growth in sales relative to pre-crisis levels (Sirikeratikul 2020). Although some food sector business innovations are more technology- than labor-intensive, particularly those in the e-commerce sector, the job opportunities they create may be more attractive to urban youth than traditional food sector jobs, whether in food production, processing, logistics, or services. At the same time, given the stark socioeconomic rifts that run through Asia’s urban populations, sector opportunities are two-tracked in many ways. However, these circumstances also mean that the food sector has the potential to generate a wide variety of business opportunities and to engage people of widely different wealth and educational attainment.

Meanwhile, ripe as it is for disruption in almost every segment, the wider food sector may also be an important outlet for cities’ social, economic, and human capital and their capacity to innovate. Cities, with their nonfarm industries and skillsets and as centers of research and training, face the potentially significant innovation and growth opportunities that lie in bringing disruptive innovation to food supply chains. Although it is now catching up, the food sector has generally lagged in entering the digital economy and leveraging digital technologies to upend consumer experiences and modes of production. Compared to others, food supply chains have yet to fully enter the digital era. This state of play points to an opportunity for cities to fulfill a potentially important function in bringing about change in the food and agriculture sector at large and in maintaining its relevance to enterprising youth. Indeed, business and employment
opportunities in the food sector are not limited to serving consumers directly; they have to do with developing entire food supply chains. For example, as many expanding cities come to encompass or brush against the farmland that lies in their peripheries and as demand for fresh food products rises, urban centers may increasingly be in a position to support the capacity of local food production systems to cater to them as well as more distant markets. The development and support of highly productive and high-value periurban horticultural production activities, in particular, alongside ones in food processing, logistics, marketing, and services, may be among the areas that generate a new crop of career opportunities for educated and less educated urbanites.

**The opportunities will vary by city.** Those already surrounded by food production in their hinterland may face more obvious and immediate opportunities to develop businesses in their urban-rural interface, while those with less of an agricultural belt may be less tied to existing models and thus ‘freer’ to develop new forms of farming in their surroundings. Wherever they lie, opportunities are likely to be syncretic, offering new ways of repurposing the assets that cities bring to bear, whether those lie in their capacity for research and development (R&D), transferable industrial knowledge, commercial infrastructure, or supply of skilled and unskilled labor.

**A vibrant food economy can, in turn, have a multiplier effect on urban economies, playing a central role in shaping a city’s image and attractiveness to visitors, investors, and talent.** At a time when cities are competing for human and financial resources as much as natural ones, fostering a city food culture along with food safety can constitute a high-return yet overlooked means of transforming a city’s image and attractiveness in the eyes of the outside world. In this respect, an attractive proposition for cities may be to explore how the food economy can unlock the multifaceted potential of a circular economy—with potential benefits for job creation, waste management, energy savings, and more.

**On a more cautionary note, business opportunity in the food sector comes with a range of risks.** The dietary and other food system trends described above already point to some worrisome though not inevitable divergences between what is good for business, jobs, and economic growth on the one hand and what is good for people’s health and cities’ longer-term economic vitality on the other. The business models and foods catering to time-poor urban populations of various means can pose significant dietary health and food safety risks. Street foods, ultraprocessed convenience foods, fast food meals, and snacks can be unhealthy or unsafe. Food safety risk can increase as food businesses and entire supply chains lengthen and become more complex and their product mix more perishable. And while they are better equipped to manage food safety, modern retail stores can be a Trojan Horse for ultraprocessed foods that are unsafe in their own way and aggregately far more harmful. Parallel quests for economic formalization, the courting of corporate investment, and food sector modernization that converge in unrestricted development of “modern” food retail formats can pave the way for the kinds of foods and eating patterns that are already curtailing the quality of life and longevity of many people. When it comes to food, cities in Asia will walk a fine line between modernizing at great cost and achieving true progress.

**With the above risks in view, a particular opportunity may lie in the potential for urban food sector innovation to disrupt the supply of fresh produce to Asian cities in a boost to public health as well as cities’ economic vitality.** Highly productive, periurban and urban farms could yet become major suppliers of fresh foods, provided economic constraints are overcome. Highly productive, advanced indoor and rooftop agriculture systems with a commercial orientation have already started to appear in high- and upper-middle-income Asian cities. However, while the technical potential of these sorts of advanced systems to supply food at an “industrial scale” to cities is high, they remain incipient and are unlikely to make significant contributions to cities’ food supply in the near future, even in the best of circumstances. Their costs remain prohibitive, and human and infrastructure constraints are abundant. That said, while high-tech vertical farms are unlikely to become a major supplier of food to cities in the foreseeable future, it is possible that they and other highly productive (if less high-tech) urban farms will disrupt the supply of fruits and vegetables in certain higher-income urban markets in the coming decade or two.
Social stability, security, and city attractiveness to tourists and investors

With respect to social stability, food has the potential to be both a destabilizing and stabilizing force. On the one hand, if left unaddressed, the vulnerability of urban households to food insecurity and various food access shocks can lead cities to face problems of social unrest and detract from city safety and image, ultimately harming its attractiveness to talent, tourists, and investors. Urban safety may be difficult to guarantee in contexts where urban households face significant food insecurity (and food access inequality), particularly when reliable access to affordable food comes under threat. Food price shocks have been known to trigger urban riots, and continuous food insecurity can generally feed into social unrest, violence, and criminality. It is noteworthy that, despite rates of undernutrition generally being lower in urban parts of the region than rural ones, perceptions of food insecurity are sometimes higher in urban areas. Household interview data on ‘experienced food insecurity’ from Gallup’s World Poll point to especially marked differences between urban and rural rates in Southern Asia (a difference of 8 percentage points) (FAO 2018a).

On the flip side, food systems can and do make critical contributions to social stability. The reliability of food supply and access are of course central contributions. In many contexts, the food system is also an employer of last resort, the informal food sector in particular offering a variety of means for urban populations to generate income and ensure their basic needs when all else fails. Urban farming and the food sector more generally have also been used by some cities to repurpose disaffected and crime-prone spaces, to build social capital and strengthen communities and to engage and build the capacity of underemployed youth and other residents of cities.

The urban food sector may well continue to constitute the backbone of Asia’s informal economy, making many cities’ efforts to transform or manage informality inextricably linked to food. Although numbers on its size and economic weight are hard to come by, the informal food sector remains highly developed in many cities where it plays a leading and even essential role in fresh food supply. Across the region, the informal food sector also widely serves as a safety net of last resort for urban Asia’s vast numbers of low-income and otherwise vulnerable populations grappling with poor health, precarious employment, challenging living conditions, and severance from traditional safety nets as a result of migration or displacement. Unskilled migrants and households coping with a loss of income or other economic shocks often turn to agricultural production, food processing, and informal food vending as sources of food and income. While these facets of the food sector may not be part of cities’ vision, they are big parts of cities’ reality. Well-intended efforts by cities to formalize their urban spaces and economy can unintentionally disrupt food-based livelihoods, safety nets, and sources of nutritionally important food when the roles and workings of the informal food sector are a minor concern of planners (Box 2.5).

From a national food security perspective, the conversion of cropland in and around Asian cities is expected to make a notable dent in the output of major food crops. Because cropland around cities is generally more productive than other cropland, its projected loss is expected to have a disproportionately large impact on crop output. Overall, the 3 percent of cropland loss expected in Asia, as cities expand, translates into a 6 percent loss in crop production (Bren D’Amour et al. 2016). Some 13 percent of wheat, 10 percent of maize, 9 percent of rice, and 7 percent of soybean produced in 2000 were located in areas that are expected to urbanize by 2030 (Bren D’Amour et al. 2016). Within the region, Vietnam and China are expected to be especially hard hit compared to countries like India and Indonesia, as measured by the share of national production of staple crops they are projected to lose.

28 The Food Insecurity Experience Index was integrated into the Gallup World Poll in 2015 and has since been integrated in Sustainable Development Goal indicators. Within Asia, total food insecurity measured by this scale in 2018 was higher in South Asia (34.3 percent) than in East Asia (less than 10 percent) (FAO, IFAD, UNICEF, WFP, and WHO 2018).

29 According to the FAO, ‘It may be possible to explain this apparently counter intuitive result in terms of stronger informal social protection networks in rural areas, rural-urban differences in the price of food, or less direct access to land in urban areas.’

30 Even in wealthy countries such as Canada and the United States, informal caterers abound, producing food for delivery and take-out in their unregulated home-based kitchens. In recent years, apps such as Skip the Dishes and Uber Eats have provided a semi-formal livelihood for drivers to pick up food from small family-owned restaurants and deliver it to hungry and busy families at home, although these platforms have also come under scrutiny for contravening labor laws (Willcocks 2018).
Box 2.5: Asian cities’ informal food sector quandary

Informal food retail presents a quandary for municipal policy makers because of the mix of benefits and risks associated with it. Street food and wet market vendors operating in the informal economy are important suppliers of food in many cities and an especially important supplier of poor residents of cities. The countries of the Asia Pacific region account for nine of the top ten countries in the world in terms of the frequency of eating street foods (Nielsen 2016). The informal sector is also a vehicle for the best and worst types of food (Tefft et al. 2017). Hawkers are essential sources of healthy ingredients and cooked meals but also sources of unhealthy snack foods and dishes. In many Asian cities, or parts thereof, informal vendors are the dominant or only providers of fresh fruits and vegetables and other healthy staples. They are also a source of cooked meals for residents with limited or no cooking facilities or limited time for food preparation. However, they are also sources of ultraprocessed snacks and sometimes less-than-healthy prepared foods featuring various combinations of highly refined grains, fats, and sugars and other processed ingredients. In either case, informal food retail poses significant concerns relating to food safety. Most informal food vendors operate in the open air in makeshift structures and contend with hazards relating to poor sanitation, drainage, waste collection, and access to clean water. Their awareness of food safety risks and ways of mitigating these are variable, and implementation of these is in any case limited in a context of weak and primarily consumer-driven oversight (multiple sources in Jaffee et al. [2019]). And while informal food retail tends to be a significant source of employment and livelihood among poor urban residents, especially women, it is also sometimes a place of harassment and disorderly conduct (Tefft et al. 2017).

Resilience

Urban food systems can be sources of both vulnerability and resilience when cities are hit by natural disasters, market spirals, and, as was the case at the time of writing, pandemics. The finding that 15 out of the 20 cities most vulnerable to coastal flooding due to sea-level rise and storm surge are located in East and South Asia is indicative of the risk faced broadly by Asian cities. Another risk factor that is particularly pronounced in urban Asia comes from cities’ deep integration into the global economy. With this integration comes heightened vulnerability to being flooded by shock waves of a socioeconomic nature, such as those brought by the 1998 Asian financial crisis, the SARS crisis of 2003, the food price crisis of 2007–2008, and the global financial crisis of 2008–2009 (Baker and Gadgil 2017).

Food provisioning activities are essential services, and ensuring the continuity of urban food supply and access is a central part of disaster preparedness. Most recently, the COVID-19 pandemic has brought to light the essential nature and broad value of urban food system infrastructure in the face of biosecurity risk. Ensuring the continuity of food supply down to the last mile of distribution—the latter being at city level—is critical to ensuring continued food access as well as to protecting the functioning of food supply chains at various scales. In this respect, a high level of dependence on local food supply can be a source of vulnerability that cities should be aware of in preparing for disasters. Urban food production and marketing activities are particularly vulnerable to flooding, subsidence, and sea-level rise in Asia’s low-lying coastal cities. From a livelihoods and food access perspective, disruptions to the local food economy also have the potential to have catastrophic consequences for vulnerable populations for whom the food sector represents a safety net of last resort.

At the same time, the urban food sector can be a source of resilience for cities. Crises that do not directly cripple the food economy, particularly that grounded in informal food services, can elevate the value of its social safety net function. Food sector marketing infrastructure can also have broad value in contexts of disaster response. When the novel coronavirus outbreak led millions of people to be quarantined at home in China’s hardest hit cities in 2020, many residents turned to online grocery and meal delivery to meet a wide variety of their needs (while already regular users substituted one service for the other), shining light on China’s booming

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31 Based on an analysis by Hanson et al. (2011), those 15 cities are, in descending order of risk, Kolkata, Mumbai, Dhaka, Guangzhou, Ho Chi Minh City, Shanghai, Bangkok, Yangon, Haiphong, Tianjin, Khulna (Bangladesh), Ningbo (China), Chittagong, Tokyo, and Jakarta.
food e-commerce sector as a kind of essential infrastructure (Yang and Liu 2020). To some extent, local food production can also sometimes help ensure the continuity of food supply on a short-term basis in situations where usual food supply flows are curtailed for some reason, though limited seasonality and volumes limit the potential to rely on its contributions. More helpfully, urban cropland, like other green spaces with pervious surfaces, can help manage storm and flood waters during extreme weather events, helping to limit damage and keep transportation routes open.

An interesting phenomenon was evident in India, where the perishables sector was severely hit by the COVID-19 lockdown but where, after a period of shock, a number of innovative supply chain solutions cropped up across large and small cities. These solutions relied on social media, motivating small-scale delivery groups, a shift of business-to-business (B2B) to business-to-consumer (B2C) by some businesses, as well as the mobilization of women’s self-help groups to offer free delivery of fresh fruits and vegetables. Urban consumers in metropolises such as Mumbai found themselves paying less for these fresh, personalized deliveries. As lockdowns lift, it is the food sector that is seeing a renewal. Markets have social distancing norms (although many are being flaunted) and basic principles of hygiene and food safety are receiving more attention. Street vendors are spaced out, pavements (sidewalks) appear to be less crowded with closely packed vendors, and there is an expectation that street vendors and small food businesses will receive support for upgrading and improving their quality. It is however unclear whether the costs of these improvements will be borne by the enterprises or the consumer.

**Health and productivity**

Food is now understood to be more critical to people’s health and economic productivity than ever before. The general potential for low diet quality to impact worker productivity and healthcare expenditures is generally undermeasured and underappreciated at the city level, even though urban contexts present a distinct set of risk factors. Diet-related chronic disease has likely emerged as the number one cause of death and disability across many Asian cities. And malnutrition persists at high levels among low-income residents of cities. Together, these dietary challenges are diminishing cities’ long-term economic potential and setting them up to face onerous health care and social service costs.

In facing the rise of diet-related chronic disease, Asian cities are not alone, but they may be on their way to facing the so-called double burden of malnutrition on an unprecedented scale. Diet-related chronic disease is generally on the rise where lifestyles are urbanizing and is a particular threat among populations (such as rural-to-urban migrants) affected by childhood malnutrition, a risk factor. While this trend is not confined to cities, urban areas face a high burden of diet-related disease. Urban populations’ density and reliance on purchased food make them targets of food marketing efforts, including the advertising and sale of products like unhealthy convenience and fast foods. In addition, as a destination for rural migrants, cities are on the receiving end of populations that have a history of malnutrition and are at a higher risk of diet-related chronic disease (Box 2.6).

The marketing of unhealthy and at times unsafe food has the potential to be massively costly to city economies. From this perspective, the courting of food businesses that promise to bring cities jobs and taxable income can be misguided if it brings in poor quality employment and unhealthy foods and eating habits to urban communities. Imposing conditions on certain types of food retailers and restaurant chains that are in the business of marketing unhealthy food and wish to enter urban markets may have some power to contain their undesirable effects, particularly if large or large numbers of cities coalesce in setting standards.

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32 In the midst of the outbreak, a Financial Times headline described China’s food delivery services as “the lifeline in coronavirus outbreak” (Yang and Liu 2020). From a business perspective, the impact of the virus on the food delivery market was mixed, as a strong rise in grocery deliveries was possibly offset by a fall in deliveries of takeaway. Meituan, the industry leader, saw its online grocery sales triple during the Lunar New Year holiday, compared to the previous period.
Box 2.6: The double burden of malnutrition: a worrisome anatomy

The double burden of malnutrition refers to the coexistence of multiple forms of malnutrition within a given population, household, or individual. Asia is already among the regions where the double burden of malnutrition was especially prevalent at the country level during the 2010s and where it rose the most in the space of roughly two decades. Asian populations falling in this category are simultaneously experiencing high rates of malnutrition among children (at least 20 percent affected by stunting or wasting or both) and high rates of overweight among adult women (at least 20 percent affected, and in Maldives and Pakistan, at least 40 percent). Among 11 Asian countries assessed for the coexistence of undernourishment or thinness in children and high BMI in women or children, all of them met the criteria based on rural prevalence levels, and 6 meet the criteria based on urban prevalence levels. At the household level as well, shares of both urban and rural households affected by the double burden of malnutrition climbed everywhere in the region, over time, except in China, where shares fell in urban settings (Figure 2.20). During the 2010s, among 11 Asian countries for which recent DHS data were available, proportions of urban households with more than one form of malnutrition under their roof ranged from about 4 percent in Vietnam to 24 percent in Pakistan. At an individual level, double burden rates are comparatively low, but there are reasons to believe they could rise going forward.

![Figure 2.20: Share of Urban Households Affected by the Double Burden of Malnutrition in Selected Asian Countries, 1990s–2010s](image)

Source: Based on DHS data extracted by Barry Popkin for this study using methodologies applied in Popkin, Corvalan, and Grummer-Strawn 2019.

Note: Data are for the earliest and latest survey years available for each country in the period 1990–2020. Subregional totals reflect countries shown, only. The double burden of malnutrition at the household level was defined as one or more individuals with wasting, stunting, or thinness and one or more individuals with overweight or obesity within the same household. Empirically, it is driven primarily by the combination of women being overweight and children being stunted.

Diet quality could also be hard hit by the loss of periurban cropland, given the major role it plays in giving urban residents access to safe and affordable fresh produce. Access to it is not trivial: low consumption of fruits and vegetables were among the top-rated risk factors for death and disability in the region in 2017 (GBD 2017 Diet Collaborators and Bernabe 2019). And in much of urban Asia, local production is critical to the supply of these healthy, nutrient-dense foods. For example, urban and periurban agriculture is thought to supply on

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33 Countries were assessed for every possible combination of low- and high-calorie undernutrition among women and children, including thinness in women and high BMI in children, but the reverse pattern—wasting or stunting in children combined with high BMI in women—is what primarily drove the double burden in every country assessed.

34 Prevalence estimates for the double burden of malnutrition in Asia presented in this section are based on data from 11 Asian countries for which recent DHS data were available, and an examination of the most recent year for which household level data were available in each country; as well as the earliest year data were available from 1990 onward. These data were extracted by Barry Popkin for the present study, applying the methodology described in Popkin, Corvalan, and Grummer-Strawn 2019.
the order of 60–70 percent of (nutrient-packed) leafy vegetables in most Asian cities according to Moustier and Renting (2015).35 During winter months, official statistics36 indicate that nearly 100 percent of Hanoi’s vegetables came from within the city’s administrative boundaries (Pham, Nguyen, and Nguyen 2016 in Pham 2017). From this perspective, the loss of periurban farms could take a proportionately large toll on the supply of fresh produce to cities. The effect could be even more pronounced in contexts where transportation and cold chain infrastructure are less developed, economically and physically constraining the possibility of more distant production of perishable food items reaching urban residents. More indirectly meanwhile, by causing supply chains to lengthen, the displacement of periurban agriculture could set the stage for qualitative changes in food supply that may ultimately have significant public health implications.

Food safety: getting ahead of the curve as food supply grows more complex

Urban Asian food systems are in large part entering a stage of development associated with the potential for food safety risk to mushroom before the capacity develops to tame it. This expectation is associated with a host of phenomena. They include the population’s growing consumption of purchased food in general, and specifically of animal source, prepared, and other perishable foods; out-of-home eating; and the lengthening of supply chains. In Vietnam, whether or not this level of concern is justified, food safety is among the urban population’s top-ranking social concern, surpassing issues such as pollution and access to education and social services. Nearly 90 percent of urban residents surveyed across multiple Vietnamese cities in 2018 characterized local food as unsafe, while 97 percent of Hanoi residents surveyed in 2016 were “worried” (30 percent) or “extremely worried” (60 percent) about food safety. And while the public’s food safety fears are not perfectly aligned with the relative magnitudes of different food safety risks,37 they are not, overall, off base. Here again, a paucity of data must be factored in. Officially reported food poisonings, many of them associated with factory canteens and school cafeterias, probably represent a small fraction of foodborne disease. Ministry of Health statistics indicate that over the 2011 to 2016 period, seven foodborne diseases affected an average of 669,000 people per year (National Assembly Supervision Delegation 2017).38 Other estimates, taking into account a broader range of foodborne diseases, suggest that there are more than

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35 The source of the estimate is not specified in the article.
36 The year is not specified by the source.
37 For example, public concern for the presence of pesticides and other chemical adulterants in food is not misplaced but can be overblown relative to the concern for microbiological contamination, the larger risk by far.
9 million cases of food poisoning in Vietnam each year.\textsuperscript{39,40} In terms of Disability-adjusted Life Years (DALYs), this magnitude of cases would mean that the public health burden of foodborne disease in Vietnam is now on par with that of tuberculosis or HIV/AIDs (Table 2.1).

Table 2.1: The Health Burden of Foodborne and Other Major Diseases in Selected Asian Countries, 2016

<table>
<thead>
<tr>
<th>Disease</th>
<th>China</th>
<th>India</th>
<th>Indonesia</th>
<th>Malaysia</th>
<th>Philippines</th>
<th>Sri Lanka</th>
<th>Vietnam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuberculosis</td>
<td>148</td>
<td>1,216</td>
<td>1,514</td>
<td>146</td>
<td>1,063</td>
<td>205</td>
<td>414</td>
</tr>
<tr>
<td>HIV/AIDS</td>
<td>67</td>
<td>285</td>
<td>900</td>
<td>1,080</td>
<td>30</td>
<td>28</td>
<td>440</td>
</tr>
<tr>
<td>Malaria</td>
<td>1</td>
<td>127</td>
<td>50</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Foodborne Disease</td>
<td>272</td>
<td>720</td>
<td>693</td>
<td>293</td>
<td>455</td>
<td>685</td>
<td>390</td>
</tr>
</tbody>
</table>

Source: Based on data from WHO Global Burden of Disease and the FERG.

Note: Foodborne disease estimates relate to 2010 while the others relate to 2016.

Many countries in emerging Asia are especially vulnerable to serious foodborne illnesses attributable to animal source foods. Recent analyses, based on data collected by the WHO-affiliated FERG, suggests that 40–60 percent of the public health burden from unsafe food can be attributed to animal source foods in Cambodia, China, the Philippines, Thailand, and Vietnam (Li et al. 2019 in Jaffee et al. 2019). Furthermore, capacities to manage risks from animal source foods are highly underdeveloped, not only in these countries but across emerging Asia. This is illustrated in Table 2.2 which draws upon the assessments made by the World Organisation for Animal Health (OIE) of national veterinary services performance, selecting out a set of capacities more relevant to food safety management. Capacities are assigned ratings ranging from 1 (the lowest) to 5 (the highest) with a rating of 3 or above signaling “adequate” capacity to meet current needs. Of the seven ASEAN countries covered in Table 2.2, only two (Thailand and Malaysia) were found to have adequate capacities and financing.

Table 2.2: OIE PVS Assessment Ratings Related to Animal Source Food Safety Management Capacity

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Cambodia</th>
<th>Indonesia</th>
<th>Malaysia</th>
<th>Myanmar</th>
<th>Philippines</th>
<th>Thailand</th>
<th>Vietnam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational Funding</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Capital Investment</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Emergency Response</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Laboratory Quality</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Abattoir Inspection</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Food Operator Inspection</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Residue Testing</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Product Traceability</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Based on OIE performance of veterinary services (PVS) assessments, various years.

\textsuperscript{39} The best available estimates probably come from the work of the WHO-convened Foodborne Disease Burden Epidemiology Reference Group (FERG). Its findings were reported on a subregional rather than country-specific level. See Havelaar et. al. (2015).

\textsuperscript{40} Added to this, recent research indicates that Vietnam’s population is among the world’s most affected, longer term, by heavy metals (that is, lead, mercury, and others) ingested with food (Gibb et al. 2019).
Many Asian food systems appear to be on the upward slope of a food safety “lifecycle curve” with emerging risks outpacing the lagging capacity to manage them. A business-as-usual approach involving underinvestment by both government and the private sector on the one hand, and a regulatory approach that favors “firefighting” over preventive measures on the other, will likely result in higher public health and commercial costs from unsafe food in the future, given continued urbanization and dietary changes. However, rising foodborne illness and associated economic costs are not inevitable. These are not acts of nature but rather the results of the actions or inactions of governments, farmers, food businesses, and consumers. Countries in emerging Asia have the ability to redirect the trajectory of domestic food safety by improving the evidence base for smarter investment, policy, and regulation, and by mainstreaming safer practices “from farm to fork.”

Environmental pollution and the clean, green, well-serviced city

Food is both a risk and missed opportunity to build clean, green, and well-serviced cities.

Preventing and controlling pollution

Urban food systems are a source of pollution and waste streams that demand adequate management systems. Urban and periurban food production and handling can be a problematic source of pollution given their proximity to dense populations and urban water sources, and their potential to magnify the effects of nonagricultural pollutants. In the context of efforts to green existing and expanding cities, urban farming activities can be an overlooked source of environmental pollutants. The proximity of its emissions to dense population centers and urban water sources can be a concern, as can the potential of those emissions to magnify the effects of transportation and other nonagricultural pollutants, especially particulates. Key agricultural pollutants of concern include livestock and aquaculture feces, pesticides, and fine particulates from agricultural burning. It is not a foregone conclusion, however, that cities should uproot urban food production, pushing it ever further out from the city, as urban food production can contribute to making cities greener, healthier, and more livable in several ways.

Alleviating congestion by examining the movement of food

The movement of food throughout the city can be a major, if overlooked, source of demand for transportation, and careful food logistics planning has the potential to contribute to the alleviation of...
congestion. Limiting congestion is of interest to cities not only for environmental reasons but also because of impacts on other aspects of city life and the urban economy. The movement of food throughout the city, particularly as it travels its “last miles,” has the potential to affect demand for transportation and hence congestion and related pollution and productivity challenges. Despite its potential role in overtaxing city transportation systems, food is often omitted from urban infrastructure planning considerations or related data reporting. At the same time, informal food markets are often the target of concerted efforts to disband them in the name of improving traffic flow and city appearance. Efforts of this nature have seen limited success by failing to fully account for the habits, needs, and capacities of those sustained and serviced by the informal economy. This was the experience of several Indonesian cities. Efforts to disband informal markets can also backfire by contributing to social unrest and increasing participants’ need to travel to earn a living or procure food, particularly among those sustained by the informal food economy.

Public utilities: cost-effective service delivery

Food systems rely on urban infrastructure and public utility services to function well and safely. Those which ensure clean water, drainage, waste collection, and power for cooling, for example, are among those that are essential to food safety. At the same time, local food systems can sometimes contribute to building well-serviced cities, by offering means to lower the cost of expanding and improving the quality of public utility services. For example, urban agriculture can sometimes be leveraged to more effectively and cheaply manage the city’s organic waste streams (including food-related ones), as well as its waste and storm water. Urban farming can not only be a means for cities to maintain public green spaces at a low cost but also result in the unwanted restriction of access to public green space. That said, there is limited evidence to support that cities should systematically support local food production and “edible” green infrastructure in every context.

Contributing to broader food system sustainability, beyond the city

A narrow framing of what it means for food to be sustainable has possibly led cities to overlook the full range of ways in which they can contribute to food system sustainability—and to prevent the further transgression of planetary boundaries. The contributions of food system activities to environmental destabilization or protection can be underestimated when sustainability is assessed within too narrow a frame—and it turns out that urban activities are those that are often cropped out of food sustainability frameworks. Although food system emissions occur heavily in the farming and upstream segments of food supply chains, cities, in fact, have considerable influence over the environmental footprint of food systems both as direct and indirect emitters. Direct sources of urban food system emissions include sometimes overlooked ones like food processing, cooling, transportation, food packaging, cooking, and organic waste management. Depending on how food is managed, the nutrients present in food waste and excreta can contribute to air and water pollution and climate destabilization. Indirect emissions include all those that can be tied to urban food consumption.

Looked at through a consumption lens, urban food systems have become a significant source of climate and natural resource stress. From a climate perspective, cities will have a critical role to play in reversing the rising contributions of food systems to global GHG emissions, since failing to do so would make climate stabilization unattainable (Box 2.7). While cities can by far have the greatest impact on the climate and environment by shifting to plant-based diets, cities can also mitigate food system impacts by reducing food waste and improving the management of discarded food and organic solid waste. It is important to note that meaningful actions at the city level include but are not limited to consumers buying certified products. With a narrow understanding of sustainability, urban consumers might see their leverage over the sustainability of food systems as lying predominantly in the possibility of choosing products from farms that use environmentally-friendly farming methods. While informed purchasing is an important lever which consumers can act on, it might not be consumers’ most powerful tool—particularly when product traceability and disclosures are lacking.
As recently recognized by the C40 Cities, food consumption activities are now a major source of urban climate pollution (C40 2019). An analysis of 79 C40 cities found that food contributed to 13 percent of GHG emissions emitted by urban consumption activities in 2017, and its share was expected to climb in the years ahead (C40 2019). The analysis also found that consumption-based food emissions could grow by 38 percent by midcentury, if countries abide by their Paris climate commitments (their Nationally Determined Contributions) but do not increase their ambition.42

By examining the cumulative, consumption-based emissions of the 79 cities projected over the period 2017–2050, the analysis sheds light on major sources of food-related emissions and where additional efforts might be directed. It reveals, for example, that about 60 percent of food-related emissions were agricultural, and most of the remainder were associated with downstream energy use (only 5 percent were related to transportation). Three quarters of food-related emissions were linked to animal source foods—not factoring in their indirect land-use change emissions.

The C40 report emphasizes that changes in diets are by far the greatest potential source of food-related emission reductions in cities—while also offering important health and environmental co-benefits. C40 cities would cut their cumulative emissions by about 50–60 percent over the period 2017–2050 by moving toward healthier diets that are low in meat and dairy products. Reductions in food waste could potentially decrease food-related emissions by an additional 15 percent. The report points out that “the changes that need to be made to current consumption patterns can in some cases seem dramatic, but residents, businesses and government all stand to gain if they are achieved in the right way” (C40 2019, 3).

Source: Based on C40 2019.

The food loss and waste that occurs downstream, at the city level, can be seen as needlessly generating emissions and putting stress on the natural resources mobilized by entire food supply chains.44 It is estimated that about one-third of the food destined for human consumption never gets eaten in Asia. Going forward, Asian cities are likely to have a growing role to play in addressing food loss and waste, noting that its occurrence tends to migrate downstream toward the retail and consumer ends of supply chains as food systems develop or mature. This pattern is apparent globally as well as within Asia, judging from differences in the distribution of loss and waste in high- and lower-income parts of the region (Figure 2.22).

Figure 2.22: Distribution of Food Loss and Waste throughout the Supply Chain in Asia, 2007

Source: Based on data in Flanagan et al. 2019.

Note: Based on tonnage.

41 The C40 Cities Climate Leadership Group is a group of 94 cities around the world that account for about one twelfth of the world’s population, one quarter of the global economy, and 70 percent of global CO₂ emissions. The network includes 28 cities in East, Southeast, and South Asia.

42 This analysis, notably, does not factor in emissions related to land-use change, making its estimates conservative.

43 Just in the subset of cities analyzed, eating less red meat and more fruits and vegetables could save 170,000 deaths per year (US $600 billion based on the economic value of life), and reducing dairy consumption could save 19 billion cubic meters of freshwater per year, according to the report.

44 In some contexts—where food is not reaching those who need it for any number of reasons—food loss and waste is arguably less deplorable for environmental reasons than for food access and nutritional ones.
Another major way in which cities can alleviate food systems' environmental pressure is by helping to protect prime periurban cropland now being threatened by a combination of urban expansion and ecosystem disturbance. For historical reasons, agricultural land in the vicinity of cities is often of outstanding quality, such that its abandonment or conversion has the potential to undermine regional or national efforts to address agroenvironmental challenges—at a time when changing diets and demographic growth are increasing demands on the land. In China for example, the conversion of periurban farmland has been shown to offset many of the environmental gains from the sustainable intensification of farmland despite policies that have effectively stabilized the extent of farmed land (by reclaiming land for farming, Box 2.8). Cropland was estimated to be over twice as productive as national cropland on average in the mega-urban regions surrounding Delhi, Kolkata, and Shanghai—that is, in the Delhi National Capital Region and Jaipur, the Ganges-Brahmaputra Delta, and the Yangtze River Delta—and about 5–50 percent more productive in other mega-urban regions.

Because the conversion of agricultural land is generally irreversible, and food security is at stake, some national governments have, with varying levels of success, taken steps to protect strategic cropland from conversion in the face of urban expansion; but such policies can present tradeoffs. For example, the protection of agricultural land—and green space more generally—can be more or less compatible with compact urban form, which presents notable environmental and economic advantages. By contributing to population density, compact urban form can have a transformative effect on the energy footprint of urban populations while also setting the stage for social and business innovation. Other advantages and tradeoffs of local food production systems relate to their interface with public utilities. More broadly, these tradeoffs highlight how the spatial and structural development of cities affects most aspects of urban food systems with implications for public health, city livability, and attractiveness to investors.

**Fiscal health**

Urban food system policy decisions have the potential to impact Asian cities' fiscal health. Urban food systems are associated with a wide range of costs and benefits, and many of these are bound to translate into a fiscal impact. The net effects on municipal finance are likely to be context specific, and limited empirical work has been done examining food systems from this angle. Nonetheless, multiple impact pathways can be pointed out, as Table 2.3 illustrates. From a tax revenue perspective, food system activities may not be among the most remunerative for a city, especially those involving crop production or informal sector marketing activities. Some cities would benefit from greater spending on supportive infrastructure and services. However, depending on how they are managed, some food system activities can take pressure off of municipal expenses on things like social safety nets, organic waste and water management, and disaster response. Food systems can also indirectly impact a city’s tax base by contributing either positively or negatively to productivity and investment, given their significant bearing on public health, congestion, various forms of safety, city greenness and livability, and city reputation.
Table 2.3: Examples of Pathways by Which Food Systems May Impact a City’s Fiscal Situation

<table>
<thead>
<tr>
<th>RESOURCES: Sources of expenditure savings and revenues</th>
<th>LIABILITIES: Sources of expenditures and foregone revenues</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Savings on public services less needed by agricultural land uses</td>
<td>• Health costs and expenditures: pollution, unsafe food, diet-related chronic disease</td>
</tr>
<tr>
<td>• Public infrastructure and utility cost savings: water management savings, waste management savings, savings on management of green space</td>
<td>• Foregone business and land tax revenue: agricultural property and informal food sector activities generally less remunerative than other business sectors</td>
</tr>
<tr>
<td>• Disaster response gains: lower flood damage</td>
<td>• Administrative costs: development and implementation of supportive policies and programs (extension and technical assistance, business licensing, food safety management, waste management, training programs, food system governance, and others)</td>
</tr>
<tr>
<td>• Business income: vibrant food culture, safe food and green city image as attracting capital and business</td>
<td>• Infrastructure costs: any activity that lowers urban density can increase servicing costs</td>
</tr>
<tr>
<td>• Health cost savings: reduced chronic disease from healthy diet</td>
<td>• Social safety net cost savings: for food insecure and underemployed households</td>
</tr>
<tr>
<td>• Infrastructure costs: cropland has low servicing costs</td>
<td>• Foregone business and land tax revenue: agricultural property and informal food sector activities generally less remunerative than other business sectors</td>
</tr>
</tbody>
</table>

The following chapters look at how cities and others are responding—and could respond—to the urban food system opportunities and risks outlined here.
A growing body of literature documents notable examples of forward-looking and multidimensional urban food policy within Asia. Publications highlighting the multiple ways in which food may be integrated into urban planning (Cabannes and Marocchino 2018) and how cities can better shape their food environments (Halliday and Mendes 2019) include case studies from emerging and developed Asia. Attention has especially been paid to the food-related initiatives of some of the region’s best-resourced cities such as Seoul, Tokyo, Singapore, and several of China’s leading cities (Deakin, Diamanting, and Borrelli 2016; Dubbeling et al. 2016; Winkler Prins 2017; World Bank 2013). These and other cities have been noted for their progress in many dimensions of urban planning, governance, and socioeconomic development.

However, there are no systematic or comparative assessments of the state of urban food policy in Asia that account for the region’s great diversity of city sizes and circumstances. Individual case studies, citing the most advanced experiences, do offer useful insights into the scope for action and the challenges of implementation, yet they tell us little about the broader landscape of urban food policy in the region and
may not provide a representative picture of the practical difficulties and options available to Asian cities of varying sizes, resources, and institutional settings. Comparative research agendas on urban food policy have been pursued in Latin America (Dubbeling et al. 2017; Thomas 2014), North America and Europe (Ilieva 2017; MacRae and Donahue 2013; Magarini and Porreca 2019; Soulard, Perrin, and Valette 2017; Zeuli and Nijhuis 2017), and Africa (Battersby and Watson 2019; Frayne, Crush, and McCordic 2017), yet not in Asia. This state of research may be due to the region’s limited representation in international networks focusing on urban food policy, the short time period over which some cities have pursued explicit food policies or programs, and, perhaps, the region’s diversity of languages and governance systems, which have potentially inhibited information gathering. It is especially notable that a recent global assessment of urban food system policies included no Asian cities (Candel 2019).

Based on a survey of cities in 21 Asian countries, this chapter offers new perspectives on food system initiatives in urban Asia. Nearly 30 percent of surveyed cities, including several large ones, and just over 40 percent of smaller ones, are closer to the “starting line” of food system engagement in that they are operating in a largely reactive fashion and displaying a piecemeal approach. Cities deemed to have food-smart approaches, as defined in this chapter, include very small and very large ones and greater attention to food is not strictly a function of city size or wealth; it should not be expected to arise automatically. The transition to upper-middle-income status does not, on the whole, seem to be triggering intensified city engagement in food-related matters. With more hindsight, this assessment may come to shed light on differences in cities’ COVID-19 response since it indicates the potential for cities of similar size and means to have widely differing abilities to prioritize and respond to challenges that relate to the food system.

The aims of the survey were to (a) benchmark the status of urban food policy across a broad range of city sizes and types, (b) pilot a survey tool which could be used to track changes in municipal food policies and programs over time, (c) gauge the perceptions of city representatives regarding food-related challenges and opportunities and the robustness of ongoing efforts, and (d) classify Asian cities according to their degree and patterns of engagement in food-related matters to inform strategic discussions. It asked about the mandates available to cities to engage with food-related matters, constraints in pursuing initiatives in this area, and the range of stakeholders involved in setting priorities, implementing programs, and so on. The survey was administered online, in multiple languages, over the period from April to July 2019. A total of 278 responses were received, covering 170 unique cities from 21 countries. The most heavily represented countries in this city survey were India, Indonesia, Nepal, the Philippines, Thailand, and Vietnam.

The surveyed cities range widely in population and per capita income. As shown in Figure 3.1 (panel a), some 58 percent of the cities are relatively small with fewer than 500,000 inhabitants, and 40 percent of those have fewer than 200,000 people. On the other end of the spectrum, 13 percent of the cities, or 21 cities, have populations exceeding 3 million people. Self-reported per capita income for individual cities was sometimes of uncertain accuracy, hence the decision was made to categorize the cities according to national per capita income. On this basis, about half of the surveyed cities are in lower-middle-income countries, and among the remaining cities, upper-middle-income and low-income countries are more or less evenly represented (Figure 3.1 panel b).

**FOOD-RELATED OPPORTUNITIES, CHALLENGES, AND ENGAGEMENT OBSTACLES**

Respondents in most cities perceive the food system to provide significant economic and other opportunities, a perception that is consistent with the perspective of Chapter 2. Across the full spectrum of

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45 Bangladesh, Cambodia, China, Fiji, India, Indonesia, Japan, Lao People’s Democratic Republic, Malaysia, Maldives, Myanmar, Nepal, Pakistan, Philippines, Singapore, Taiwan (China), Timor-Leste, South Korea, Sri Lanka, Thailand, and Vietnam. The results presented in this chapter from the Asian cities surveys are partial and based on a benchmarking exercise. Additional findings and in-depth city-level analyses are expected to be presented in forthcoming FAO publications focusing on urban food governance, food availability and access, nutrition and diets, food safety and standards, food loss and waste, and rural-urban food system linkages.

46 Some cities have per capita incomes (well) above (and less frequently below) their national averages.
cities, a high proportion of respondents associate the food system with significant opportunities for employing skilled and unskilled workers, "greening" the city and surrounding areas, and promoting tourism on the basis of local cuisine and food festivals (Figure 3.2). The perceived significance of other opportunities varies somewhat by city type. For example, very small- to medium-sized cities (population <1 million) saw food manufacturing opportunities as particularly significant. Many also saw opportunities to use community agriculture as a means of strengthening their city's socioeconomic resilience. Larger cities, including some medium-sized ones, were optimistic that food systems will be an important source of foreign direct investment.
Perceptions relating to the significance of food-related challenges vary considerably across cities but views converge on the importance of addressing health. Figure 3.3 provides the overall picture. Two-thirds of cities responded that lifestyle-related diseases (obesity, diabetes) were a highly or moderately significant concern. This response highlights the need to promote healthier eating options in cities. Somewhat surprisingly, it is among very small cities (population <200,000) that the concern is most significant and widespread on this issue. Among very small cities, 58 percent find the issue to be a highly significant concern. Close to 45 percent of surveyed cities view child undernutrition as either highly or moderately significant, and among very small cities alone, 55 percent do. However, comparatively few perceive (or understand) severe public health risks associated with food safety and hygiene. Only one-fourth of the surveyed cities considered the latter to be a highly or moderately significant risk, although most large cities did. In contrast, shortages of staple foods are (or were) not considered a very significant risk, possibly because there has been advancement in the provision of staple foods through public distribution and other food security programs.

Nonetheless, cities of various sizes recognize climate change as potentially posing a substantial threat to the stability of their food supply. While shortages of staple foods are not perceived to be an important challenge, a relatively high proportion of cities with fewer than 1 million people (and especially those with populations under 200,000) has significant concerns about food price volatility. These concerns are borne out by the impacts of the recent COVID-related lockdowns and disruptions to food supply. Indeed, climate change–related weather events are likely to similarly disrupt supply and cause price volatility—in their case, via impacts on agricultural productivity and production patterns, and food transportation, logistics, and storage among other things.

Figure 3.3: Perception of Food System Challenges among Surveyed Cities

Nonetheless, cities of various sizes recognize climate change as potentially posing a substantial threat to the stability of their food supply. While shortages of staple foods are not perceived to be an important challenge, a relatively high proportion of cities with fewer than 1 million people (and especially those with populations under 200,000) has significant concerns about food price volatility. These concerns are borne out by the impacts of the recent COVID-related lockdowns and disruptions to food supply. Indeed, climate change–related weather events are likely to similarly disrupt supply and cause price volatility—in their case, via impacts on agricultural productivity and production patterns, and food transportation, logistics, and storage among other things.

Figure 3.3: Perception of Food System Challenges among Surveyed Cities

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47 Whether or not such perceptions are based on evidence is not clear. Only about one-fourth of surveyed cities have conducted a dedicated food security survey covering their population. Such survey work is rare in small cities and most common among megacities (population >10 million) and cities with between 1 and 3 million people.

48 This may be partly due to the way the question was asked. Respondents were asked whether “deaths due to poor sanitation or hygiene” are a significant problem. Official statistics on foodborne disease probably account for “the tip of the iceberg” given the low diagnosis and reporting of cases, particularly in the absence of death.

49 Differences in risk perceptions relating to healthy and staple food access underline the importance of building food as well as nutritional security across the region.
A lack of food market infrastructure and transportation services are cited as significant challenges by smaller cities. Land-use competition pitting agricultural and nonagricultural uses against one another is considered a significant challenge by a majority of cities and by cities of all sizes. Nearly all megacities (population >10 million) see this issue as a moderate or substantial concern, as they do the issue of traditional markets facing competition for land. Some two-thirds of cities with a population of less than 1 million people do too.

**Perceived mandate and capacity to act**

Most cities have a wide mandate to engage in food systems and could potentially be doing more to positively shape them. Starting with an assumption that even where city leaders recognize important opportunities and challenges, their ability to act in many areas may be constrained (or prevented) by limited (or absent) mandates provided to them under existing laws and regulations, the survey probed whether or not cities are permitted to engage in a variety of areas. The survey-wide responses are summarized in Figure 3.4. Overall, most cities have a fairly wide mandate to engage with matters that strongly impact their food systems. However, the situation does vary among city types. For example, just under one-third of surveyed cities have limited or no mandate to administer or oversee farmland. Yet this mandate is more commonly lacking for very small cities—56 percent in this survey. This issue could be an important one for cities to focus on as the sustainable (and sustained) use of

![Figure 3.4: Selected Food-Related Mandates of Surveyed Cities](image)

- Licensing of micro-, small-, and medium-sized enterprises in food sales and manufacturing: 63% have mandate, 14% have mandate but minimal actions, 10% limited mandate, 9% no mandate, 3.5% do not know.
- Food safety management: 49% have mandate, 21% have mandate but minimal actions, 16% limited mandate, 11% no mandate, 2% do not know.
- Promotion of healthy diets: 47% have mandate, 29% have mandate but minimal actions, 13.5% limited mandate, 7% no mandate, 3% do not know.
- Supply and monitoring of potable water: 66.5% have mandate, 18% have mandate but minimal actions, 11% limited mandate, 3.5% no mandate, 1% do not know.
- Provision of food in times of disaster/emergency: 58% have mandate, 14% have mandate but minimal actions, 15% limited mandate, 7% no mandate, 6% do not know.
- Planning of new wholesale centers: 35% have mandate, 20% have mandate but minimal actions, 18% limited mandate, 15% no mandate, 11% do not know.
- Farmland administration: 38% have mandate, 13% have mandate but minimal actions, 18% limited mandate, 25% no mandate, 6% do not know.
Farmland can be a central aspect of resilient urban food systems. A very large proportion of the surveyed cities has a mandate to provide food in times of emergencies or natural disasters, although in cities of under 500,000 inhabitants, this mandate tends to be limited in scope. While a large majority of cities has mandates for food safety oversight and the promotion of healthy diets, a more significant proportion of small and very small cities has limited mandates or limited activity in these spheres.

Cities may have the motivation and (at least limited) mandates to act on many food-related matters, yet encounter practical obstacles in doing so either because conventional planning does not include processes to consider food issues, or because human or financial resources are limited. Respondents were asked about a variety of potential constraints relating to financial and other resources and a variety of institutional or governance matters (Figure 3.5). Approximately one-third of cities noted that food management is not deemed to be a priority by city leaders. Some differences were observed across cities of different sizes. Low prioritization

![Figure 3.5: Perceived obstacles to food policy engagement among sampled cities](image-url)

Levels of significance of obstacles to food policy engagement:

- **Food management is not a priority of city government**: 16.6% major, 22% medium, 20% minor, 19% not an obstacle, 22% do not know.
- **Food is not traditionally addressed within the scope of city planning**: 29% major, 30% medium, 15% minor, 18% not an obstacle, 8% do not know.
- **Lack of capability in private sector to report on food production and supply**: 31% major, 27% medium, 15% minor, 17% not an obstacle, 9% do not know.
- **Lack of human or institutional capacity**: 41% major, 32% medium, 13% minor, 9% not an obstacle, 5% do not know.
- **Limited financial resources and funding**: 43.5% major, 21% medium, 19% minor, 9% not an obstacle, 7% do not know.
- **Limited scope allowed by the state/central government**: 43% major, 27% medium, 22% minor, 18% not an obstacle, 9% do not know.
- **Lack of coordination and coherence among policies**: 27% major, 25% medium, 25% minor, 16.5% not an obstacle, 6.5% do not know.
- **Lack of guiding laws and policies**: 18% major, 31% medium, 22% minor, 24% not an obstacle, 5% do not know.
- **Difficulties with execution due to a higher level of government having the mandate**: 17% major, 30% medium, 23.5% minor, 23.5% not an obstacle, 6% do not know.
of food system issues was more common among cities with a population in the range of 500,000–1 million. Just over half of the sample indicated that food-related matters are not commonly addressed within the scope of city planning; and among very small cities, 70 percent of cities report this.

Reflecting weaknesses in their own food systems’ governance, a majority of cities view the lack of guiding laws and policies and the lack of effective coordination or coherence of policies as moderate or substantial obstacles. Just over half of surveyed cities report moderate to significant obstacles to act when a mandate is shared with (or primarily ascribed to) a central government ministry or agency. These issues are somewhat more prominent among smaller cities yet are commonly cited across the entire spectrum of city sizes. Just under two-thirds of the surveyed cities cite financial resources as a moderate or significant obstacle. This share rises to about 72 percent in relation to human and institutional capacities. These are constraints cited across the full spectrum of cities and are likely proportional to the significance of major food problems and the scale and ambition of policies and programs. For example, five of the eight megacities indicate that limited human and institutional capacities are a major obstacle. Capacity building to plan, identify, and apply innovative solutions, such as improved use of city spaces for food system functions, may help address financial constraints and other concerns.

CURRENT APPLICATION OF POLICY INSTRUMENTS AND PROGRAMS

Asian cities vary enormously in the breadth and depth of their food policies and programs and in their approaches to prioritizing, implementing, and integrating these initiatives. The survey tool solicited information about the nature and breadth of cities’ engagement in food-related matters, covering potential city functions relating to planning, regulation, advocacy, safety nets, and technical or financial support. And it did this in relation to the full farm-to-fork pathway, covering interventions pertinent to primary agricultural production, food logistics, food manufacturing, food distribution, food waste management, food safety management, and consumer behavior. Survey questions also probed the processes of city food policy development including the role of surveys and consultations with different types of stakeholders.

A number of cities reported having initiatives relating to certain aspects of primary production, food distribution, food and nutritional security, food quality and safety, and diet quality. Figure 3.6 illustrates the variation in responses across different areas of policy for the entire sample of cities. Nearly two-thirds of the surveyed cities include in their land-use plans zones earmarked for agriculture or community farms, although a much smaller proportion provide funding or otherwise subsidize urban farming. Some type of food waste composting program is implemented in nearly three-fourths of surveyed cities. In relation to food distribution, 74 percent of the cities have publicly owned fresh produce retail markets, typically located in or near residential areas, while half or just below that provide or lease public warehousing facilities to private distributors or have organized centers or food courts for street vendors. Similarly, about half of the surveyed cities regularly or periodically intervene to control or cap price levels for certain foods or have contingency arrangements to store or distribute food in times of shortage. Less than one-fourth of the cities run food banks or have other regular food distribution or voucher schemes for meeting the needs of food insecure households. A similarly low proportion of cities provides incentives for food service companies to increase healthy food offerings.

Larger cities generally have higher take-up of food system interventions than smaller ones. This is clearly evident in relation to the use of price controls and contingency programs to deal with food shortages (Figure 3.7). Possible factors here are that larger cities (a) are under more organized stakeholder or political pressure to act against food shortages or price spikes and (b) may have more financial or regulatory oversight capacity to act in these areas. The need for larger, multipurpose warehousing capacity is likely greater in larger cities, and hence, a large majority of cities with over 1 million people are engaged in this area versus only one-third of the smallest cities. Programs for feeding the hungry also increase in number along with city size, although it seems that megacities find it easier to provide vouchers or cooked food than to support secondary distribution of leftover fruits and vegetables. Megacities also report food waste composting initiatives in smaller proportions than smaller cities.
Figure 3.6: Selected Food Policy Initiatives of Surveyed Cities

- Publicly-owned wet markets: 73.5%
- Extension programs for farmers: 65%
- Zones earmarked for farms or agriculture in city plans: 62%
- Food waste composting: 60%
- Price controls for certain food items: 55%
- Publicly-owned hawker centers/food courts to house the street vendors: 50%
- Food security policies for food provision in times of shortage: 49%
- Health certification programs for street vendors: 45%
- Warehousing facilities for aggregator/middleman use: 45%
- Funds/grants/subsidies for urban farms: 41%
- Soup kitchens or a food stamps programs: 23.5%
- Subsidies for eating establishments to use healthy foods: 22%
- Food banks or programs for redistribution of leftover fruits and vegetables: 19%

Figure 3.7: Selected Food Policy Initiatives of Surveyed Cities, by Size of Population
Agricultural land-use zoning is common across all cities but is also less frequent among the smallest and largest cities, perhaps due to less land pressure in the former and the lack of suitable available space now in the megacities. While only half the megacities formally zone agricultural land, two-thirds of them provide direct support for urban farmers through extension services, grants, or subsidies. Yet these cities are far less active in supporting food waste composting. For a few policy instruments there appear to be common patterns across the sample. For example, two-thirds or more of the surveyed cities have public wet markets, and a little under half have health certification and good hygiene practice programs for street vendors.

Country-level differences in the interventions pursued by cities suggest that food system priorities and the suitability of different instruments probably vary by geography, but also that there is potential for exchange and learning across different parts of the wider region. Figure 3.8 provides the breakdowns for six middle-income countries for which 10 or more cities responded to the survey. Initiatives supporting urban farming and waste are extremely common among cities in Indonesia, Nepal, the Philippines, and Vietnam, while in India and Thailand, urban agriculture is more commonly zoned than it is directly supported. Indian cities commonly support food waste actions such as composting and the redistribution of unsold fruits and vegetables. To address food security and access, contingency programs to distribute staple foods in times of shortage are found in the majority of cities in four of these countries, but such programs are rare in Nepal and Thailand. The application of price controls to food items is much more common among cities in Indonesia and the Philippines than elsewhere, a pattern consistent with both countries’ overall more active government involvement in controlling food trade. Engagement relating to food distribution infrastructure also varies. While public wet markets are commonly found in cities across all of these countries, public involvement in wholesale markets is common in India and Vietnam but not elsewhere. Public centers for small food vendors are very common in Indonesian and Indian cities but minimally found in Thailand and, especially, Vietnam. Subsidies for eating establishments to promote healthy foods seem to be common in Vietnam and relatively rare elsewhere.

Figure 3.8: Selected Food Policy Initiatives of Surveyed Cities, by Country
Survey results were analyzed in such a way as to enable the benchmarking of city food system engagement against peers based on their size, national designation, per capita income level, and other characteristics. Based on their survey responses—pertaining to food-related planning, programs, regulatory actions, stakeholder interactions, and so forth—cities were scored on the extent to which their food-related policies and governance arrangements satisfied the following criteria:

- **Proactive**: the extent to which a city’s food system engagement is forward-looking to future problems or opportunities, as reflected in its diagnostics, plans, regulations, preventive or catalyzing initiatives, and so on. The complexity of food issues, their ties to broader matters of demographic and economic change, and their interconnections with other aspects of city planning and governance put a premium on forward-looking perspectives and actions. The opposite of a proactive urban food policy would be a reactive one—that involves “putting out fires” as and when major problems arise.

- **Integrative**: the extent to which a city’s urban food work is multisectoral in scope and involves effective coordination across different government (and private) entities. This is important as many food-related issues are interconnected. Synergies are missed when actions are taken through traditional siloes or not sequenced properly. The opposite of an integrated urban food policy would be a fragmented (or highly incomplete) one.

- **Inclusive**: the extent to which a city’s urban food work gives attention or priority to the welfare of disadvantaged, vulnerable, and poorer consumers and food operators and the degree of participation of civil society and various interest groups in the deliberation of food policies or program options. The opposite of an inclusive urban food policy would be an inequitable one or one involving top-down decision making with minimal participation from civil society.

The benchmarking was done by aggregating and weighting the city scores for these three dimensions of food policy engagement. For each city, aggregate scores were calculated for proactiveness, integration, and inclusiveness. And, in combining the three together, proactiveness was assigned a 50 percent weight, while the other two dimensions were each assigned a 25 percent weight. The rationale for this is the fundamental importance of cities anticipating future problems and opportunities pertaining to the food system. Otherwise, their ability to mitigate (health, environmental, or other) food-related risks and realize the full potential from their food economies will be highly constrained. Cities operating in a firefighting mode on food-related matters can hardly be expected to address them in an integrated way or one that involves broad stakeholder participation. Developing synergistic approaches and broad ownership of policies and programs normally requires at least some degree of forward thinking and preparation. Some level of proactiveness can be considered a prerequisite for the other favorable dimensions of urban food system engagement. These other dimensions—integration and inclusiveness—are what provide the depth or intensity of city food system engagement and therefore the scope for this engagement to result in equitable and sustainable outcomes.

This analysis yields a very diverse picture across the overall surveyed sample as well among cities that might regard themselves as similarly positioned peers. No city obtained even close to a perfect score of 100 percent, although some did receive high scores in relation to one or more of the three dimensions. The top weighted score was 87 percent, recorded by the provincial city of Hung Yen in Vietnam. Only 15 of the 170 cities recorded a weighted score of 65 percent or above. Of these, two are very small cities, six are small- and medium-sized cities (population 200,000–1 million), and seven are larger cities (>1 million). Nine of these cities are in countries designated as lower-middle-income, while there are three cities each from among upper-middle-income and high-income countries. At the other end of the spectrum, the lowest score was

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50 The survey inquired into whether cities have active programs of their own in many food-related areas or whether they play a role in implementing national programs in such areas. Other questions probed the extent to which cities carry out food system assessments (such as food security surveys) or monitoring work (for example, hazard surveillance). Still other questions explored matters of institutional coordination and stakeholder outreach and consultations. These and other types of questions/responses were subsequently coded as being relevant for a proactive, integrative, or inclusive approach to food matters.
11 percent, recorded by Dhaka, the capital of Bangladesh. Forty-one cities scored 30 percent or below. Cities of all size categories are well represented among this cluster of especially low scoring cities. For four countries—Bangladesh, Lao PDR, Indonesia, and Myanmar—their largest cities are among these with especially low food system engagement scores.

Considerable diversity is found in the state of food policy engagement among the region’s capital cities (Figure 3.9). Fifteen of them completed surveys. Three of them—Singapore, New Taipei City, and Beijing—rank in the top 20 of the overall sample. These three, plus Dili, score considerably better than the other capital cities in the proactiveness dimension. Seoul’s intermediate scoring—it ranks 57th in the total sample—was somewhat surprising given its involvement with the Milan Urban Food Policy Pact and the high profile of some of its food-related initiatives, especially those relating to reducing food waste and improving the nutritional quality of school food. Kathmandu’s score positions it near the midpoint of the sample, and six of the capitals have scores in the sample’s bottom half.

<table>
<thead>
<tr>
<th>City</th>
<th>Proactiveness</th>
<th>Integration</th>
<th>Inclusiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dhaka</td>
<td>2%</td>
<td>6%</td>
<td>3%</td>
</tr>
<tr>
<td>Vientiane</td>
<td>13%</td>
<td>6%</td>
<td>7%</td>
</tr>
<tr>
<td>Jakarta</td>
<td>15%</td>
<td>4%</td>
<td>8%</td>
</tr>
<tr>
<td>Naypytaw</td>
<td>20%</td>
<td>7%</td>
<td>7%</td>
</tr>
<tr>
<td>Colombo</td>
<td>17%</td>
<td>11%</td>
<td>8%</td>
</tr>
<tr>
<td>Hanoi</td>
<td>17%</td>
<td>12%</td>
<td>10%</td>
</tr>
<tr>
<td>Kathmandu</td>
<td>20%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Tokyo</td>
<td>23%</td>
<td>11%</td>
<td>8%</td>
</tr>
<tr>
<td>Phnom Penh</td>
<td>22%</td>
<td>11%</td>
<td>10%</td>
</tr>
<tr>
<td>Delhi</td>
<td>21%</td>
<td>12%</td>
<td>11%</td>
</tr>
<tr>
<td>Seoul</td>
<td>20%</td>
<td>13%</td>
<td>14%</td>
</tr>
<tr>
<td>Dili</td>
<td>27%</td>
<td>14%</td>
<td>12%</td>
</tr>
<tr>
<td>Beijing</td>
<td>32%</td>
<td>16%</td>
<td>15%</td>
</tr>
<tr>
<td>New Taipei City</td>
<td>37%</td>
<td>14%</td>
<td>14%</td>
</tr>
<tr>
<td>Singapore</td>
<td>35%</td>
<td>16%</td>
<td>16%</td>
</tr>
</tbody>
</table>

Note: Maximum scores are 50 (proactiveness) and 25 (each for integration and inclusiveness) for a total of 100.

There is also considerable diversity in the food system engagement status of cities of similar size. This is illustrated in Figure 3.10 comparing the status of the 55 medium-sized cities covered in the survey. Several of these cities rank among the top scorers for the entire sample while several others rank toward the bottom. The degree of proactiveness is what primarily distinguishes the cities in the middle of this peer group, as there is much less variation in terms of how they score on integration and inclusiveness.

There is no clear progression in urban food policy engagement when countries graduate from lower-middle-income to upper-middle-income status (Figure 3.11). In fact, the proportion of cities with a score of 50 percent or above is higher among cities in lower-middle-income countries than it is among cities in upper-middle-income countries (38 percent versus 31 percent). And a majority of cities in upper-middle-income countries score poorly in the proactiveness dimension while this was the case for just over one-third of the cities.
Figure 3.10: Food Policy Benchmarking of Selected Medium-Sized Asian Cities

<table>
<thead>
<tr>
<th>City Name</th>
<th>Proactiveness</th>
<th>Integration</th>
<th>Inclusiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vinh</td>
<td>42%</td>
<td>21%</td>
<td>16%</td>
</tr>
<tr>
<td>Zamboanga</td>
<td>42%</td>
<td>20%</td>
<td>17%</td>
</tr>
<tr>
<td>Jayapura</td>
<td>16%</td>
<td>20%</td>
<td>17%</td>
</tr>
<tr>
<td>Cagayan de Oro City</td>
<td>16%</td>
<td>17%</td>
<td>18%</td>
</tr>
<tr>
<td>Kota Cimahi</td>
<td>13%</td>
<td>16%</td>
<td>16%</td>
</tr>
<tr>
<td>Kota Balikpapan</td>
<td>13%</td>
<td>17%</td>
<td>13%</td>
</tr>
<tr>
<td>City of San Jose Del Monte</td>
<td>13%</td>
<td>17%</td>
<td>13%</td>
</tr>
<tr>
<td>Kota Sukabumi</td>
<td>15%</td>
<td>17%</td>
<td>17%</td>
</tr>
<tr>
<td>Da Lat</td>
<td>17%</td>
<td>14%</td>
<td>15%</td>
</tr>
<tr>
<td>Tagum City</td>
<td>14%</td>
<td>13%</td>
<td>15%</td>
</tr>
<tr>
<td>Banda Aceh Municipality</td>
<td>14%</td>
<td>13%</td>
<td>12%</td>
</tr>
<tr>
<td>Mueang Nonthaburi</td>
<td>16%</td>
<td>14%</td>
<td>12%</td>
</tr>
<tr>
<td>Peddapalli</td>
<td>11%</td>
<td>13%</td>
<td>15%</td>
</tr>
<tr>
<td>Cheongju</td>
<td>17%</td>
<td>10%</td>
<td>11%</td>
</tr>
<tr>
<td>Thanh Hoa</td>
<td>10%</td>
<td>10%</td>
<td>13%</td>
</tr>
<tr>
<td>La Union</td>
<td>16%</td>
<td>13%</td>
<td>13%</td>
</tr>
<tr>
<td>Kota Yogyakarta</td>
<td>14%</td>
<td>13%</td>
<td>12%</td>
</tr>
<tr>
<td>Tarakan</td>
<td>12%</td>
<td>11%</td>
<td>11%</td>
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<tr>
<td>Dili</td>
<td>13%</td>
<td>12%</td>
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<tr>
<td>Tanjung Pinang</td>
<td>16%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Nellore</td>
<td>14%</td>
<td>10%</td>
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<tr>
<td>Hai Duong</td>
<td>14%</td>
<td>10%</td>
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<tr>
<td>Pokhara</td>
<td>15%</td>
<td>15%</td>
<td>10%</td>
</tr>
<tr>
<td>Khlong Luang Municipality</td>
<td>15%</td>
<td>15%</td>
<td>10%</td>
</tr>
<tr>
<td>Kota Kupang</td>
<td>8%</td>
<td>11%</td>
<td>11%</td>
</tr>
<tr>
<td>Kendari City</td>
<td>13%</td>
<td>9%</td>
<td>9%</td>
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<tr>
<td>Ichalkaranji</td>
<td>13%</td>
<td>10%</td>
<td>10%</td>
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<tr>
<td>Viet Tri</td>
<td>10%</td>
<td>8%</td>
<td>8%</td>
</tr>
<tr>
<td>Kathmandu</td>
<td>9%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Birgunj Metropolitan City</td>
<td>9%</td>
<td>11%</td>
<td>11%</td>
</tr>
<tr>
<td>Kota Cilegon</td>
<td>8%</td>
<td>8%</td>
<td>8%</td>
</tr>
<tr>
<td>Surakarta</td>
<td>7%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Baguio City</td>
<td>13%</td>
<td>11%</td>
<td>11%</td>
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<tr>
<td>Colombo</td>
<td>8%</td>
<td>8%</td>
<td>8%</td>
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<tr>
<td>Pakse</td>
<td>7%</td>
<td>7%</td>
<td>7%</td>
</tr>
<tr>
<td>Janakpurdh Sub Metro.</td>
<td>11%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Lalitpur</td>
<td>9%</td>
<td>9%</td>
<td>6%</td>
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<tr>
<td>Naypyidaw</td>
<td>7%</td>
<td>7%</td>
<td>9%</td>
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<tr>
<td>Eluru</td>
<td>10%</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>City of Maloios</td>
<td>7%</td>
<td>8%</td>
<td>8%</td>
</tr>
<tr>
<td>Siliguri</td>
<td>6%</td>
<td>8%</td>
<td>8%</td>
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<tr>
<td>Thai Binh</td>
<td>8%</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>Pattaya City</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
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<tr>
<td>Biratnagar Metropolitan</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Kota Sorong</td>
<td>8%</td>
<td>8%</td>
<td>8%</td>
</tr>
<tr>
<td>Vientiane Capital</td>
<td>7%</td>
<td>7%</td>
<td>7%</td>
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<tr>
<td>Puducherry</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
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<tr>
<td>Kota Jambi</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
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<tr>
<td>Udaipur</td>
<td>7%</td>
<td>7%</td>
<td>7%</td>
</tr>
<tr>
<td>Luang Prabang</td>
<td>2%</td>
<td>7%</td>
<td>7%</td>
</tr>
<tr>
<td>Addu City/Feydhoo</td>
<td>4%</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td>Seberang Perai</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>City of Paranaque</td>
<td>3%</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td>Bharatpur</td>
<td>4%</td>
<td>4%</td>
<td>4%</td>
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</tbody>
</table>
in lower-middle-income countries. The great diversity of scoring patterns within these two income groups suggests that other factors are influencing how individual cities embrace and approach the food agenda, including possibly, consumer awareness and activism.

Figure 3.11: Food Policy Benchmarking of Cities by National Income Status

Panel (a): Cities in Lower-Middle-Income Countries

Summing Up the State of Play: A Typology of City Food System Engagement

Applying the survey data to cluster or classify Asian cities in terms of how advanced they are in applying the core principles of proactiveness, integration, and inclusiveness, we find that a small proportion of the surveyed cities have advanced far in this journey. Nearly three-fourths of the sampled cities are either approaching food issues in a reactive, firefighting mode or are at a comparatively early stage in the development and implementation of a forward-looking, coherent, and inclusive approach to food policy and governance.

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51 Cutoff points were used to assign cities a “high,” “medium,” or “low” grade based on their raw scores. These grades were then used to develop a four-way city classification scheme summarized in Table 3.1.
This pattern is not entirely surprising given the institutional factors laid out in Chapter 1, and it confirms the urgency of addressing the array of challenges and opportunities cities face in relation to food system trajectories and outcomes, as discussed in Chapter 2.

Table 3.1: Typology of City Food System Engagement

<table>
<thead>
<tr>
<th>Category</th>
<th>Share of surveyed cities</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food-Smart City</td>
<td>8%</td>
<td>This class of cities has mandates, actions, and policies in a large majority of pertinent areas of urban food systems and have effectively mainstreamed food system matters into broader urban physical, economic, and other planning. These cities receive HIGH ratings in relation to proactiveness, integration, and inclusiveness. While these cities are approaching food-related matters in a smart way, they generally still have much unfinished business—in mitigating food-related risks or realizing the full potential of food-related employment and economic growth.</td>
</tr>
</tbody>
</table>
Category | Share of surveyed cities | Characteristics
---|---|---
Progressive City | 19% | This class of cities is generally proactive across multiple food-related topics, although not to the same extent as food-smart cities. These cities receive a HIGH rating for one (and less commonly, two) of the assessed dimensions, but typically still have much to do in the inclusiveness dimension. For some of these cities, implementation lags behind what are emerging to be well-developed plans. Such cities have made progress in formalizing food-related decision making and programs, raising the likelihood for their continuity and sustainability.
Engaged City | 44% | This category of cities has become proactive in addressing selected food-related topics and has taken some steps to build linkages among different food topics or efforts and involve more stakeholders in food-related dialogue and decisions. Hence, they receive a MEDIUM rating for several of the categories. Most such cities are at an early stage of formalizing food-related efforts (that is, beyond individual projects), so there remain challenges for continuity of efforts across municipal administrations.
Reactive City | 29% | This class of cities tends to manage food-related problems as and when they occur and has made little or no progress in integrating food-related risks and opportunities into overall city planning or municipal governance. These cities rate LOW for proactiveness and either LOW or MEDIUM in the two other dimensions. For these cities, food-related policies are often not evidence-based, given limited attention to surveys, stakeholder consultations, and other pertinent data collection.

The proportion of cities in each of these four categories of engagement differs by city size group. For example, the vast majority (88 percent) of very small cities are at the early stages of deeper food system engagement, 42 percent of them being in the reactive mode (Figure 3.12). Just 3 percent of them are considered food-smart. Among small cities, a significantly smaller share is in reactive mode (about 30 percent) and a much larger proportion (29 percent versus 9 percent) is considered progressive, one step away from food-smart. Some 55 percent of medium-sized cities are in the first two stages of food policy engagement, yet 18 percent of them meet the criteria for the food-smart designation. Larger cities generally score higher on food system engagement, although the relationship is not linear. The pattern for large cities (population 1–3 million) is interesting. Nearly two-thirds of them have taken modest steps to reach the engaged stage and nearly 30 percent are classified as progressive, but none of the 26 large cities in the sample is classified as food-smart. A possible explanation may be that these cities are also having to address or cope with a very broad set of urbanization problems and have found it difficult to give due attention to food-related matters or to effectively address these issues in an integrated manner. We would argue that an early inclusion of a food system perspective in urban policy making may help address many urbanization challenges such as jobs, congestion, food waste, and affordable food access.

The region’s very large cities have the largest proportional representation among the food-smart cities, although fully half of the 18 very large cities surveyed still fall in the bottom two categories of food policy engagement. Survey responses indicate that among the latter laggards, the lack of political commitment and leadership on food issues has tended to be a serious constraint.

While income and resource availability levels seem to be important factors in city proactiveness, the transition to upper-middle-income status does not, on the whole, seem to be triggering intensified city engagement in food-related matters. This may have long-term adverse consequences (Figure 3.13). Nearly two-thirds of the surveyed cities in low-income Asian countries fall into the reactive category and only 3 percent
of such cities have relatively advanced food policy approaches. The situation is much more varied among cities in lower-middle-income countries and those in higher-income categories. Interestingly, among cities in upper-middle-income countries, a larger share of cities is operating in the *reactive* mode than the share classified in the top two categories combined. This differs from cities at the lower-middle-income level, which are more than twice as likely to be in the two middle categories as in the *reactive* category.

In situations where political commitment and leadership are not deemed to be an obstacle, cities are nearly twice as likely to have reached the *food-smart* or *progressive* modes than the average city (in the overall sample). This suggests that while lower income levels no doubt place significant if not binding financial and other constraints on effective urban food action, quite a few cities lack political commitment to, or leadership on, urban food. In 44 percent of the surveyed cities, the respondents indicated that a lack of commitment or leadership constituted either a medium or major obstacle (Table 3.2). Not surprisingly, this reality has affected food system engagement. Among the cities where commitment or leadership was seen as lacking, nearly 90 percent are either in the *reactive* mode or have advanced only modestly.

**Note:** Income groups are based on World Bank categorization.
### Table 3.2: City Perceptions of Food Commitment and Leadership by City Food System Engagement Status

<table>
<thead>
<tr>
<th></th>
<th>Food-Smart</th>
<th>Progressive</th>
<th>Engaged</th>
<th>Reactive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cities</td>
<td>%</td>
<td>Cities</td>
<td>%</td>
<td>Cities</td>
</tr>
<tr>
<td>Not an obstacle</td>
<td>6</td>
<td>46</td>
<td>12</td>
<td>36</td>
</tr>
<tr>
<td>Minor obstacle</td>
<td>3</td>
<td>23</td>
<td>12</td>
<td>36</td>
</tr>
<tr>
<td>Medium obstacle</td>
<td>4</td>
<td>31</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Major obstacle</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>16</td>
</tr>
<tr>
<td>No answer</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>13</td>
<td>33</td>
<td>75</td>
<td>49</td>
</tr>
</tbody>
</table>

**Capital cities**

While capital cities might be expected to be among the most *food-smart* and *progressive* in addressing food system matters—due to their resource base and their hosting of national technical ministries or agencies dealing with food and agricultural matters—the actual pattern is quite varied, as illustrated in Table 3.3. One of these six cities (Dhaka) is classified as *reactive* and Jakarta just escapes this classification. Both of these cities have limited mandates in important areas, lack forward planning, and report limited food-related programs. Vientiane (Lao PDR) is another capital city in the region whose food system engagement falls into the *reactive* category. Additional work needs to be done to understand why these cities remain largely reactive in terms of planning and initiatives.

Most of the region’s capitals are in the *engaged* category and hence face room to improve the intensity and quality of their food system engagement. This category includes Colombo and Phnom Penh, which are involved in various types of food-related forward planning yet still deploy a limited set of specific policy instruments. Seoul also falls within this category although this city implements a broader set of food-related programs and has one of the more elaborate arrangements for urban food system governance in the region, as is elaborated upon in Chapter 4. Many other capital cities in the region also fall into this category, namely Hanoi (Vietnam), Nay Pyi Taw (Myanmar), New Delhi (India), and Tokyo (Japan). There are also a few *food-smart* cities among the region’s capitals. Singapore is a *food-smart* city-state, something it needs to be in order to be rated among the world’s most food secure countries despite relying on imports for some 90 percent of its food supply. Several elements of Singapore’s food story are noted in Chapter 4 and treated more comprehensively in Centre for Liveable Cities (2018). Beijing is another capital city classified here as *food-smart*.

### Table 3.3: A Tale of Six Cities: City Food System Engagement Status, Illustrated

<table>
<thead>
<tr>
<th>City</th>
<th>Food-Smart</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singapore</td>
<td>• Highly proactive food system policies integrated across government agencies and stakeholders; has inclusive policies for vulnerable populations</td>
</tr>
<tr>
<td></td>
<td>• Comprehensive policies to protect its limited and dwindling farmland; food security roadmap is based on a population survey</td>
</tr>
<tr>
<td></td>
<td>• 3 Food Baskets policy aims to diversify food sources, promote local production, and encourage local food companies to establish operations elsewhere in the region</td>
</tr>
<tr>
<td></td>
<td>• Import-substitution policy for selected products</td>
</tr>
<tr>
<td></td>
<td>• Multidimensional Healthy Choice campaign</td>
</tr>
<tr>
<td>City</td>
<td>Engagement Level</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------</td>
</tr>
</tbody>
</table>
| Seoul        | Engaged          | ✷ Capacity to plan, manage, approve, and build food infrastructure  
✦ Well-developed food waste management program  
✦ Programs for vulnerable communities addressing undernutrition and obesity  
✦ Mandate for management of agricultural land but not urban farms; may not be successful in protecting land used for food production  
✦ Programs to promote healthy diets including through school canteens |
| Colombo      | Engaged          | ✷ Beginning to address transportation infrastructure constraints and food sanitation problems  
✦ Plans for the distributions of food in times of disaster  
✦ Mandate to manage street vendors and restaurants, but efforts are only partially successful and incidence of foodborne disease still high  
✦ Limited mandates to manage farmland; strong land competition  
✦ Limited mandates for the planning, approval, construction, and management of food-related infrastructure such as wholesale and fresh food markets  
✦ Limited mandate to promote healthy diets |
| Phnom Penh   | Engaged          | ✷ Programs for food distribution in the event of emergencies, although high volatility in staple food prices is not being addressed  
✦ Able to licence the formal food sector, but not the informal sector, although it is starting to zone areas for street food vendors  
✦ Programs for promoting healthy diets and conducted a food insecurity survey in the past  
✦ Mandate to conserve farmland, but strong trend toward urban sprawl  
✦ No or limited mandate for food market infrastructure |
| Jakarta      | Engaged          | ✷ Has a Grand Design for Urban Farming but it has little statutory weight  
✦ Limited mandate to manage farmland and losing farmland to urban sprawl  
✦ Limited mandate for planning and construction of food market infrastructure  
✦ Lacks food relief programs for times of disaster  
✦ High levels of food loss and waste but few formal programs to address it  
✦ High levels of food price volatility with no programs to address it |
| Dhaka        | Reactive         | ✷ Limited mandate for management of agricultural land  
✦ Limited capacity to supply and monitor potable water  
✦ Mandate for planning of food market infrastructure but limited action  
✦ Severe infrastructure and transportation constraints in food marketing are unaddressed  
✦ High levels of food loss and waste  
✦ Frequent staple food shortages and price spikes but limited response  
✦ Widespread food safety problems and minimal capacity to address them  
✦ Has not completed a food security survey and does not hold regular consultations with food system stakeholders |
Chapter 2 highlighted major economic opportunities associated with Asia’s urban food market development as well as important challenges and risks associated with food and nutritional security, food safety, and food-related pollution. A survey of Asian cities undertaken for this study provides a confirmation that some awareness of food system issues exists, although the landscape is varied and particular differences exist among cities of different sizes. However, for the vast majority of surveyed cities, the perceived importance of many food system issues is not matched by commensurate levels of planning, investment, programming, or other forms of policy engagement. Overall, some three-fourths of surveyed cities and a majority of the capital cities are deemed to be at relatively early stages of becoming proactive, integrative, and inclusive in their approach to food-related policy.

Food-related matters are not currently mainstream features of urban governance, development, or land-use planning in many if not most Asian cities. Again, close to 30 percent of surveyed cities, including two capitals, many large cities, and over 40 percent of smaller cities, are at early stages of food system engagement. This situation is problematic and even dangerous given the potential for food system shocks, as the COVID-19 crisis has made so tangible (having led to supply disruptions and restrictions on the movement of people among other things). Sometimes it does take a crisis to capture the attention of policy makers and other stakeholders, and to motivate them to act more decisively to mitigate longer-term risks—as well as to approach their long-standing objectives in new and sometimes more effective ways.

The pre-COVID situation varied considerably across surveyed cities, including among cities of a similar size. Notable differences appeared in the strength of cities’ legal and regulatory mandates to act on food matters, in the resource, institutional, and other constraints cities faced to act on their mandates, and in how well city leaders and administrators prioritized food system issues. The survey showed that perceptions, constraints, and actual portfolios of food-related initiatives differ substantially among cities of different sizes. Although the literature on urban food policy in Asia pertains mostly to larger cities, there are many areas in which very small- to medium-sized cities could engage more or do so in more systematic and inclusive ways. Among larger cities, particularly among capitals, generally there is scope to engage in food systems more proactively and to work out smarter food system governance arrangements and programs with attention to resilience, integration, and inclusiveness. Chapter 4 turns to the question of how Asian cities can do more.
With unique strengths and multiple points of leverage to take on food system challenges and opportunities, **Asian cities have considerable room to maneuver.** As described in Chapter 2, unhealthy food systems could set cities back irreparably in relation to their broader goals and priorities. Moreover, cities that remain complacent about shaping their food systems may miss significant opportunities to strengthen their social fabric, resilience, and economies. More positively, for cities interested in engaging more proactively and wisely in the food system, there is now a wealth of international policy experience they can draw on. This chapter presents a selection of approaches and lessons that cities can consider using to improve their food system and city in tandem, inspired from and illustrated with farm-to-fork experiences from within and outside the region.

**That said, emerging Asia will almost certainly need to experiment in its “own kitchen” a great deal more to compose its own “menu” of policy actions.** Much of the urban food policy experience accumulated to date comes from high-income parts of the world, and while many challenges of cities are globally shared, some responses will lack relevance or need to be adapted. New approaches specific to emerging Asia will be
needed to take on food system challenges that differ in both nature and scale. Most of the examples cited here come from cities themselves, but not always. As discussed in the previous chapter, cities can set standards and establish new approaches that would benefit from being coordinated and supported by higher levels of government. Thus, cities need not look only to other cities when exploring the world of possibilities but also to other actors such as private sector and community groups.

The approaches discussed in this chapter are organized into four categories that, as broad as each is, distinguish different sets of food system stakeholders and parts of the food supply chain that can serve as targets or points of entry for intervention. Figure 4.1 represents the four categories graphically. The first section of the chapter explores how cities can approach governing urban food systems. This piece is treated first because it represents an “umbrella” for all areas of policy with relevance to the food system. The following three sections cover the three broad segments of the supply chain: food consumption, marketing, and primary production.

One reason why the food supply chain is treated in “reverse chronological order,” from fork to farm rather than farm to fork, is to begin in what is likely to be more familiar territory for cities. In a traditional schema of the wider food system, cities are themselves typically represented as being on the consumption end of the food supply chain, and for good reason. Cities are where most food is consumed in contemporary Asia. City governments also enjoy a natural proximity to consumers, and interventions most directly targeting consumers will likely seem the most familiar and befitting to many cities. For many municipalities, intervening further upstream in food supply chains will represent more of an incursion into new territory.

Figure 4.1: Realms of Urban Food System Intervention

![Figure 4.1: Realms of Urban Food System Intervention](image-url)
A second reason for beginning with consumers is to interrupt the reflexive equating of food policy with agricultural policy. Becoming more proactive in relation to food need not imply focusing on (urban) agriculture, although it might include such a focus depending on city circumstances. However, as noted in the introduction, one hypothesis or conjecture of this analysis is that, in Asia particularly, urban food policy has languished too long in the shadows of national agricultural policy, in part due to a narrow framing of food system challenges and opportunities. It is time for municipal and other policy makers working in different sectors and levels of government to develop a more holistic understanding of food policy and hence adopt a more proactive role in building better food systems.

More generally, the focus on different (connected) parts of the food system is meant to enable a discussion of “how” cities can act that is independent from “why” action may be warranted. Whereas the previous chapters make the case for focusing on food and assess the current status of food systems and policy in emerging Asian cities—in an attempt to answer the questions “why” and “what”—this chapter turns to the question of “how” cities can make food a more central policy concern and intervene more proactively and wisely. Each section of this chapter identifies a number of different motives that policy makers might have for intervening in each part of the food system, but quickly moves on to identifying actions that can be taken, commenting whenever possible on what is known about their effectiveness. The chapter is meant to be a window to the world of possibilities—possible ways for the public sector to influence and leverage the food system—rather than a normative guide or roadmap or endorsement of any particular objective (or approach). Hence, this particular chapter is more of a toolbox than a call to action. Table 4.1 is offered as a guide to this toolbox, listing the topics and approaches covered under each subsection, and pointing out how they align with a variety of motives policy makers may have for intervening in relation to food-related matters. The table underscores how policy objectives may be pursued by intervening at different points in the food system.

Far from exhaustive, the approaches and examples presented in the chapter were selected for their potential relevance to a range of cities across Asia. To this end, special consideration is given to a number of challenges that loom large in many cities of emerging Asia, including those relating to informal settlements and rural-to-urban migration, informal food marketing (including the ubiquity of small vendors, street food, and wet markets), congestion, cities’ outward expansion, and for low-lying and coastal cities especially, vulnerability to climate change. That said, their treatment is limited by the lack of documented experience addressing them from an urban food system angle.

<table>
<thead>
<tr>
<th>Table 4.1: Guide to Food-Related Policy Motives and Approaches Covered</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Motives for intervention</strong></td>
</tr>
<tr>
<td>1. Urban food system governance</td>
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<td></td>
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<tr>
<td>Motives for intervention</td>
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<td>--------------------------</td>
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<tr>
<td><strong>2. Doing more at the consumer level</strong></td>
</tr>
<tr>
<td>✷ Enabling better dietary choices and patterns to prevent the costly rise of diet-related chronic disease</td>
</tr>
<tr>
<td>✷ Empowering consumers to avoid unsafe food and avoiding its negative health impacts</td>
</tr>
<tr>
<td>✷ Eradicating undernutrition to ensure social justice, social stability, and economic health</td>
</tr>
<tr>
<td>✷ Ensuring social protection of vulnerable urban populations through functional safety nets</td>
</tr>
<tr>
<td>✷ Promoting ecofriendly consumption to reduce food systems' environmental externalities</td>
</tr>
<tr>
<td>✷ Promoting food choices that also support the local food economy</td>
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<tr>
<td></td>
</tr>
<tr>
<td>✷ Enhancing safe, healthy, and demand-responsive food access</td>
</tr>
<tr>
<td>✷ Managing disruptions to food marketing–based livelihoods, especially in the informal sector</td>
</tr>
<tr>
<td>✷ Reducing congestion related to the movement of food</td>
</tr>
<tr>
<td>✷ Reducing food loss and waste and managing organic and inorganic waste streams</td>
</tr>
<tr>
<td>✷ Stimulating food business and job creation</td>
</tr>
<tr>
<td>✷ Reducing tax evasion in the informal food economy</td>
</tr>
<tr>
<td>✷ Promoting a city’s image, factoring in aspects such as orderliness, functionality, cleanliness, social justice, poverty, and cultural vibrance</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>✷ Protecting dietary health by protecting the supply of nutritionally vital fresh fruits and vegetables and minimally processed foods</td>
</tr>
<tr>
<td>✷ Managing disruptions to the livelihoods and food supply of those reliant on urban agriculture</td>
</tr>
<tr>
<td>✷ Managing and possibly supporting the performance, environmental or otherwise, of de facto urban farming activities through urban extension</td>
</tr>
<tr>
<td>✷ Supporting the development of marketing and value addition channels for local producers</td>
</tr>
<tr>
<td>✷ Leveraging farming to maintain pervious space, good for flood and storm water management, the offtake of waste, and the upkeep of green spaces</td>
</tr>
<tr>
<td>✷ Preserving farms for edutainment purposes (requiring a much smaller scale)</td>
</tr>
</tbody>
</table>

Note: The categories included in this table are non-exhaustive and sometimes overlapping.
GOVERNING URBAN FOOD SYSTEMS

Cities may be the natural pioneers of food system governance in rapidly urbanizing contexts. For a host of demographic, political, and economic reasons discussed above, cities are being propelled to the forefront of the food policy debate (Brand et al. 2019), increasingly needing to and being expected to assume a leading role in food systems’ governance.

Reasons for engaging with urban food system governance are multiple and include:

- Creating a space and developing the capacity within government to systematically consider food-related matters across multiple areas of policy making.
- Engaging strategically and proactively in the urban food system.
- Coordinating and connecting different food system stakeholders.
- Gaining more perspective on the food system implications of various policies and potential tradeoffs implied by food system or other interventions.
- Creating a touchpoint for the city to connect with non-city stakeholders on food system matters, including higher levels of government and translocal networks.

Cities are in a position to lead the transition to, or at least help fashion, more just and sustainable food systems—and to do so through more collaborative and integrated policy approaches. Those approaches are tacitly viewed by many as being better equipped than more traditional, centralized, and top-down approaches to place the values of economic performance, public health, social justice, and ecological integrity on more equal footing. Such approaches are also understood to be more accessible to cities, to the extent that they enjoy some proximity to communities and greater administrative agility than higher levels of government. Cities may be the level of government best able to develop and actually pursue an integrated food policy—national government efforts in this direction having not progressed far beyond the agenda-setting stage (Candel and Pereira 2017).

Box 4.1: Considerations about the sequencing of urban food policy and governance

In theory, it might be ideal for cities’ first steps into food-related policy to involve the definition of a broad vision and strategic plan and the creation of a food system governance structure outfitted to guide and coordinate its implementation and monitor its results. However, this sequencing—from vision to action—guided by a coherent institutional setup, is rarely if ever the norm; and it need not be. The norm is a messier process, yet one that can work for cities.

A common pattern is for cities or particular stakeholders to encounter a specific problem and act to address it, often in firefighting mode or through trial and error. Early actions may be duplicative and uncoordinated and may even work at cross purposes. And the continuity and deepening of efforts may be dependent on the existence and efforts of champions. In that respect, staying the course and finding lasting and impactful solutions can seem ad hoc. Yet, progress often occurs and the players involved learn from the experience, including about what does and does not work, and build new relationships. The accumulation of knowledge and social capital is then sometimes leveraged to take on a related or different challenge (or opportunity), and approaches are adjusted. In some cases, trust and confidence build among an expanding set of stakeholders.

Eventually, reactive and technically siloed approaches are found to be non-optimal and key stakeholders and city officials recognize the likely advantages of a more formal and institutionalized approach to what comes to be seen as a highly interconnected set of food-related matters. Formalization may take the form of a strategy, action plan, or some other forward-looking document. Institutionalization can take a variety of forms, both within government and involving multiple other stakeholders. The moral of this story is that the appropriate sequencing of policy efforts depends on local circumstances.
Cities of all sizes and means have an interest in establishing food system governance structures early on, regardless of the depth and breadth of the intervention they aspire to. Food system governance structures need not precede city action. However, giving thought to food system governance early on can help cities establish their scope of intervention, establish transparency around how the public sector is already intervening (including possible inefficiencies), and strategically align public resources with their priorities. Minimal intervention is better than not making any decision at all, and doing so may help contain the costs of food system interventions in cities that face many competing priorities. Where food system risks are present, preventive action can help minimize city expenditures on food system challenges—one example being the need to respond to overt breaches of food safety.

A growing body of international experience, especially in middle- and upper-income countries, points to important steps that can be taken to establish food system governance. These include (a) formalizing food policy as an area of city focus through laws and strategies; (b) defining institutional responsibilities; (c) determining city priorities, modes of intervention, and performance tracking; (d) mobilizing public resources for all of these; and (e) joining (or creating) translocal networks of cities sharing experiences and accountability in the area of food system governance, such as the Milan Urban Food Policy Pact.

Holistic food system policies rarely originate from top-down city initiatives, more often developing organically around gateway issues that broadly mobilize the public and policy makers in increasingly systemic efforts. Municipal mobilization around food system policy can become the logical next step when various food policy efforts converge, reflecting growing awareness of the interconnectedness or systemic nature of food system challenges and opportunities.

Some of the most common gateway issues leading to broader food system governance initiatives have been urban agriculture, food safety, and access to nutritious foods by particular segments of the urban population. A growing number of Asian cities have integrated urban agriculture into policy texts such as laws, regulations, ordinances, or strategies that define it and make explicit its significance to the city. In Japan, urban agriculture gained formal recognition at the national level when, in 2015, a law recognizing the multiple benefits of urban agriculture called for national and local authorities across the country to take up supportive measures including preferential taxation policies (Umeda 2015). The city of Bangalore, in India, developed a master plan that envisions the city developing in five concentric belts, with agriculture pushed to—but also protected in—the city’s outermost periphery (World Bank 2013). The need to address growing food safety risks has been the leading driver behind efforts in major Vietnamese cities, including Danang and Ho Chi Minh City, to institutionalize multisectoral governance arrangements and create food policy master plans.

These and other issues provided the background and motivation for Seoul to move toward a comprehensive food system strategy and governance structure. The latter are embodied by its adoption of the Seoul Food Master Plan of 2017, and its creation of a Food Policy Division (Box 4.2). The preparation of this master plan took about two years and, remarkably, involved some 2,000 experts and 150 public debates. From the late 2000s onward, public interest and concern around food safety, urban agriculture, and school food access grew in intensity, eventually leading city leadership to reflect on the food system more widely and holistically and develop a coordinated institutional approach. While the city had long-standing policies on food safety, a food safety working group was set up in 2008 in an effort to strengthen the coordination of various city agencies. The scope of this working group was later expanded and it developed the city’s (2013) Healthy Seoul Food Strategy. In parallel, the city in 2011 passed and began implementing legislation dedicated to developing and supporting urban agriculture, and established a division of urban agriculture in its office of economic planning. In a show of support, the incoming mayor declared 2012 the year of urban agriculture, giving the topic visibility among the wider public.
Box 4.2: Genesis of city food system governance: the case of Seoul

For Seoul, the issue of school food has played an especially important role in bringing visibility to food system issues, elevating the profile of urban food policy and forcing a holistic perspective, involving multiple stakeholders. The city came to view the program not only as ensuring equal access to food for school children but also as an opportunity to promote healthy eating and ecofriendly consumption and production and to support smallholder farmers in nearby rural areas. The Seoul Eco Public Plate Project pursued these objectives by establishing a procurement mechanism involving several thousand smallholders operating in the vicinity of Seoul, numerous social enterprises and cooperatives, and several satellite (and sub-municipal) government entities. A notable feature of this program is that it proceeded in phases, first focusing on children’s right to good food (Free Eco-School Meal Project), and then moving into a series of proof-of-concept pilots for the expanded program (Seoul Eco Public Plate Project) and procurement system (Seoul Procurement for Urban-rural Coexistence Project).

Like many other cities that have established an organizational structure dedicated to governing the food system, Seoul’s structure involves a central coordinating agency and a network of multiple government agencies and civil society organizations. At the center of this structure is the Food Policy Division, in which two of its six teams focus on the cross-cutting topics of food policy and food strategies, respectively. Formerly the Food Safety Division, and renamed in 2017, the Food Policy Division sits in the Civil Health Bureau and, in addition to food safety, is responsible for the establishment and implementation of the Food Master Plan, food statistics and information, the management of the Civic Food Committee and Subcommittees, and diet improvement. Other food-related functions or responsibilities are assumed by other administrative entities in Seoul’s government. They include the Ecofriendly Meal Division in the Lifelong Learning Bureau, the Living Environment Division in the Climate and Environment Headquarters, the Urban Agriculture Division in the Economic Planning Headquarters, and the Welfare Policy Division. The involvement of these and other entities brought multiple perspectives and policy goals to the table, including education, social welfare, public health, and rural development.

Seoul’s food system governance network also includes several parastatal and national actors. They include semi-autonomous agencies subordinate to the city government including the Seoul Organic Food Distribution Center, under the Seoul Agro-Fisheries and Food Corporation, and the Seoul Institute of Health Environment. They also include several agencies that are subordinate to national-level ministries, such as the Centers for Children’s Food Service Management, funded by the Ministry of Food and Drug Safety, and the Education Support Center for Dietary Life, funded by the Ministry of Agriculture, Food and Rural Affairs. The city’s food system governance structure involves a number of civil society networks. Civil society is actively involved in food system governance in Seoul, and one way in which its involvement is formalized at the city level is through the seats that the heads of these organizations hold on various city-level food policy committees (for example, the Subcommittees and the Planning and Coordination Committee of the Civic Food Committee of Seoul). The Seoul Metropolitan Food Policy Advisor is also the chair of the Hopeful Food Network, a civil society network or organization.

Source: BCFN MUFPP 2018.

Cities have relied on and formalized a variety of different institutional arrangements or organizational structures to govern the food system. Some have created new administrative structures, usually within existing ones, to take on responsibility for broad food system issues or a subset thereof. Others have embedded specific or overarching food system responsibilities into the jurisdiction of existing administrative structures. The responsibilities assigned usually include the coordination of disparate actions. While no single institutional arrangement has emerged to govern food policy at the municipal level, many if not most cities that have explicitly taken on food policy have appointed a lead agency (new or existing) to oversee a networked governance structure. These structures typically involve a wide range of administrative offices and also, most often, entrench the participation of nongovernmental food system stakeholders. After all, food system mobilization has in many parts of the world displayed certain qualities of a social movement, leading municipal governments to branch away from traditional, top-down approaches to governance (Box 4.3 and Box 4.4).
Box 4.3: Food system collaborative and networked forms of governance

The urban food movement, which has been described as a “a loose and sometimes chaotic assemblage of municipal activism and civic engagement,” is considered by some to be among the most rapidly growing social movements of our time (Brand et al. 2019). That movement is now spawning a growing number of more formal urban food system governance initiatives. Although social movements have been defined in different ways, they are generally understood to involve “a network of informal interactions between a plurality of individuals, groups and/or organizations, engaged in a political or cultural conflict, on the basis of a shared collective identity” (Diani 1992). Notwithstanding mounting attempts to formalize them, local food system governance initiatives have generally arisen out of broad-based efforts to advance toward the shared vision of a food system transformed to better serve the public interest and have tended to operate like networks.

Urban food system governance initiatives—both their aspirations and structures—are taking shape accordingly. Driven jointly by municipal government and civil society organizations, food system policy initiatives have been rooted in aspirations to new, collaborative, and networked forms of governance. Local food system governance initiatives have generally been the products of civil society organizations joining forces with municipal politicians and officers to fashion a more sustainable urban foodscape (Brand et al. 2019). These initiatives seem to reflect a growing aspiration, or pressure, to design municipal policies “with” rather than “for” civil society. As central as it is to urban food policy initiatives, collaboration remains, to an extent, an aspirational concept—as aspirational as integrated food policy itself.

Guided as they are by the principle of collaboration, many urban food system governance initiatives operate like networks. It has been typical for municipal food policy councils themselves to operate like networks, involving multiple governmental agencies as well as outside stakeholders, and varying degrees of decentralization. Collaboration is also a central guiding principle of various explicit networks that have been formed to support local food policy councils and other food policy efforts, such as the Milan Urban Food Policy Pact, and the Food Policy Network run by the Johns Hopkins Center for a Livable Future (CLF). A central function of these and other translocal food policy networks has been to support or facilitate networking, partnerships, research, and technical assistance. Similarly, many food policy councils also strive to help people connect, share knowledge, find resources, and realize change.

Box 4.4: The Baltimore Food Policy Initiative: food policy governance

Baltimore is considered a role model in the United States in terms of food policy governance and action. The city’s collaborative and networked approach to food system governance is apparent in the architecture of the Baltimore Food Policy Initiative (BFPI), established in 2010 to “improve health outcomes by increasing access to healthy affordable food in Baltimore City’s food deserts.” The BFPI is an intergovernmental collaboration involving at least a dozen public agencies, spearheaded by the Department of Planning, where the food policy director sits. The initiative is jointly led and implemented by the Office of Sustainability, the Health Department, and the Baltimore Development Corporation, with contributions from other city agencies and civil society organizations. Under the BFPI, public agencies share and divide responsibilities in ways that are meant to address food from social, economic, health, and environmental perspectives. The Department of Planning directs strategic planning and collaboratively develops the city’s food policy agenda as well as food system maps and plans and strategies to address retail food deserts and acts as the interface between city, state, and federal nutritional and agricultural policies.

The city’s Development Corporation has a designated food retail economic development officer who is responsible for developing food retail in food deserts and administers a variety of incentive and financing programs to do so. The Health Department oversees a range of programs that are focused on increasing food access and “food justice” at the community level. Its suite of programs includes Healthy Stores, Virtual Supermarket, and Neighborhood Food Advocates. The Office of Sustainability focuses on promoting the production, distribution, sales, and consumption of locally grown food within the city. It does this through land leasing and tax incentive programs, among others. It is also responsible for developing a food resilience plan. The city is also responsible for administering federal food safety nets such as the Supplemental Nutritional Assistance Program. The BFPI is supported by what is known as the Food Policy Action Coalition, or Food PAC, a body of nonprofits, universities, farms, businesses, hospitals, and residents established to advise the BFPI on food system challenges and food policy barriers and how these can be addressed.
Regardless of which approach corresponds best to city realities, jurisdictional clarity and coordination processes are essential to the successful implementation of policies in a domain (food) that touches on so many aspects of city life. Urban agriculture in particular can be challenging to govern because it generally requires the involvement of multiple actors—including actors that might extend beyond a city’s administrative borders and include multiple levels of government. In large metropolitan areas, the institutions involved in food system governance structures sometimes span multiple geographically contiguous or imbricated administrative units (or jurisdictions).

**Planning and data considerations**

The key “how” when it comes to governing urban food systems proactively may consist of the very act of incorporating food into broader urban planning efforts. Without belittling the need for effective administrative arrangements, evidence, and processes, the specific approaches to these may matter less than the general orientation toward food. Incorporating food requires planners to ask two broad questions about planned or unplanned urban realities and policies: (a) what will be their effect on food system outcomes, including but not limited to urban agriculture and food availability and access, and (b) what will be the effects of food system realities, including but not limited to urban agriculture, on other outcome areas that matter to the city. A non-exhaustive list of planning considerations to which food can be related would include:

- Local food production and distribution: land and space for growing food, infrastructure for its storage, transformation, distribution, and waste management.
- Local agrofood industries, food economy, bioeconomy, tourism, and city branding.
- Public health and healthy food access among specific populations.
- Income and employment generation.
- Social stability.
- Congestion relating to food transportation, or in other words, its movement.
- Environmental pollution (contributions of food to exacerbating and mitigating it).
- Public utility and other services (food and agriculture contributions to recreation, park management, cooling, air filtering, and water and waste management).

The city of Bangkok has explicitly incorporated urban agriculture and food marketing into city planning. Elements of food planning such as urban agriculture and food marketing were recognized in the city’s comprehensive development plan of 2013. Plans were made to accommodate small-scale farming, food storage, and local food markets in the inner city, including residually zoned parts of the city (Figure 4.3).

Food system priorities can be established through a combination of data collection and analysis, as well as public consultation and involvement. Indeed, it is cities’ prerogative to ensure that food system assets,

Figure 4.3: Agriculture and food marketing feature in Bangkok’s comprehensive plan of 2013

Source: Bangkok Department of City Planning, Bangkok Metropolitan Administration, in Boosabong 2018.
activities, and stakeholders are represented in planning processes. A strong emphasis on deep community involvement—spanning the business and citizen sectors—has been a nearly universal feature of recent city engagement around food policy. While this emphasis reflects emerging best practices in policy and program design, dependence on community input in the arena of municipal food policy also no doubt reflects the major data gaps most cities have to contend with in measuring food system realities. It is never too soon for cities to start collecting data supporting the basic description of the municipal food system and, over time, for an increasingly sophisticated assessment of how “RICH”—that is reliable, inclusive, competitive, and health-promoting—the food system is. Data needs will vary depending on the scale and nature of the policy issues in focus. For illustration, Box 4.5 provides an example of the types of data that can be collected for the purposes of integrating urban agriculture into planning efforts.

Box 4.5: Integrating agriculture in comprehensive planning through focused data collection

There are many ways in which urban and periurban agriculture can be explicitly included in comprehensive development planning. Towns in the United States have, for example, created agricultural advisory committees for this purpose. Other approaches include farm surveys, focus groups, and the mapping of agricultural resources. These instruments can be used to collect a range of objective and subjective data, as illustrated in Table 4.2. A key purpose of such data collection can be to identify the best soils and locations for farming and establish priority farming areas, setting the stage for targeted protection measures. Other features that can be weighed besides soil quality include the contiguity of farmland, proximity to water sources, and time to market.

Table 4.2: Data Collection for Integrating Agriculture in Urban Planning

<table>
<thead>
<tr>
<th>Surveys and focus groups</th>
<th>Mapping of a community’s agricultural resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Acreage owned or rented by farmers</td>
<td>• Soil quality</td>
</tr>
<tr>
<td>• Nature of the farm business (wholesale versus retail)</td>
<td>• Location of state-certified agricultural districts within the town</td>
</tr>
<tr>
<td>• Types of market outlets, types of commodities produced</td>
<td>• Concentrations of farm parcels or farm operations</td>
</tr>
<tr>
<td>• Short- and long-term plans for the farm business</td>
<td>• Proximity to water or sewer lines or to existing hamlets, villages, cities, or other growth-inducing factors</td>
</tr>
<tr>
<td>• Challenges facing local farmers and rural landowners</td>
<td>• Proximity to natural features such as streams and wetlands or other community amenities such as parks</td>
</tr>
<tr>
<td>• Participation in existing town, county, state, or federal programs</td>
<td></td>
</tr>
<tr>
<td>• Interests in possible town policies or programs</td>
<td></td>
</tr>
<tr>
<td>• Opinions on current town policies or programs</td>
<td></td>
</tr>
</tbody>
</table>

Source: Adapted from Haight and Held 2011.

To support planning efforts, data mapping tools can be useful analytic tools for planners to develop a spatial understanding of food systems and their interactions with the wider urban environment. Many types of data can be examined spatially, or mapped, for this purpose, and countless tools are available to spatialize data. Some are food system–specific, but the underlying mapping and data visualization tools they rely on are generally not. Maps can be used to highlight spatial patterns relating to food production, access and deprivation, pollution hotspots, logistical bottlenecks, food supply vulnerabilities, and more. They provide an important analytic basis for land-use planning, including in relation to food production and distribution. They can also be used to track changes, including progress toward city objectives. As described in Box 4.6, Baltimore is one city that has carried out in-depth analysis and mapping of its urban food environment to support policy making. Baltimore is a city in the United States that struggles with deep social and economic challenges and its efforts to spatially analyze how food systems relate to these challenges is state of the art.
In professing their support for food system objectives, cities can demonstrate commitment, realism, and accountability by aligning budgetary resources with them and laying out measurable goals to be reached by a certain date. Seoul’s municipal government did so when it laid out a vision and budget for becoming an “agro-city” in 2015—and made progress toward this lofty-sounding objective measurable. By 2018, it planned to establish 1,800 vegetable gardens and ensure that every home would be no more than a 10-minute walk away from one.\(^52\) In China, the city of Nanjing resolved to ensure residents’ proximity to wet markets starting in the early 2000s (Zhong et al. 2018).

Box 4.6: Measuring food deserts and food environment hotspots: efforts by the city of Baltimore

To carry out the analysis that feeds food policy making, Baltimore worked closely with partners such as the University of Baltimore, which houses well-known public health, planning, and sustainability research programs. The university was instrumental in developing the city’s physical food environment maps drawing on Geographic Information Systems (GIS) technology. In 2009, the Johns Hopkins CLF developed an operational definition of food deserts for the city which considers four dimensions: (a) distance to supermarkets, (b) poverty, (c) vehicle availability, and (d) the quality and availability of healthy food in all food stores. Since 2015, the city refers to “healthy food priority areas,” a concept deemed more descriptive and less pejorative. Specifying thresholds, the operating definition of such areas adopted by Baltimore in 2018 became: “an area where the distance to a supermarket is more than \( \frac{1}{4} \) mile, the median household income is at or below 185 percent of the Federal Poverty Level, over 30 percent of households have no vehicle available, and the average Healthy Food Availability Index score for supermarkets, convenience and corner stores is low (0–9.5) (measured using the Nutrition Environment Measurement Survey).” Defined as such, healthy food priority areas not only consider the presence of food retail points but also the food items that they have on offer. The measurement of these dimensions is specified in detail in Baltimore’s Healthy Food Environment Strategy.

Types of food retail factored into Baltimore maps included supermarkets, farmers’ and public fresh food markets, Balti market, urban farms and community gardens, and nutrition assistance program sites (that is, free and reduced meals for seniors, children, homeless populations, and others).\(^53\) To better understand food access inequities and develop targeted interventions to address them, the city of Baltimore overlays its food environment maps with socioeconomic and demographic data.

Joining translocal networks can become a means for cities to share and learn from peers’ experiences; and the lack of Asian representation or food systems focus in existing networks should be remedied. Urban food policy networks include cities with various levels of commitment and local resources devoted to food systems. For cities with less experience in food system policy, translocal networks can offer readymade frameworks for thinking through, committing to, and accounting for progress toward food system goals. For Seoul, the process of joining the Milan Urban Food Policy Pact in 2015 seems to have brought additional momentum to its engagement in food policy and planning by putting its commitment on an international stage. Membership can thus take on a life of its own, awakening local stakeholder interest, reshaping local policy conversations, and ultimately leading to the reprioritization of existing resources or mobilization of new (potentially nontraditional) ones. To date, Asian cities have had relatively low representation in international urban food policy networks, such as the Milan Urban Food Policy Pact; and food policy has not been an explicit focus of regional or global city networks in which Asian cities are more strongly represented. It was a noteworthy development, in this respect, when 14 global C40 Cities (including Tokyo and Seoul from the region) signed a food-related declaration in late 2019, pledging to address the urban food sector’s significant contributions to cities’ environmental footprint.\(^54\)


54 The founding focus of the C40 Cities network was the need to act on climate change. With the adoption of the Good Food Cities Declaration in late 2019, this network aimed to incorporate a food focus in its efforts to improve the quality of urban life and reduce its environmental footprint. They pledged to align their food procurement efforts with the whole food, plant-centric Planetary Health Diet laid out by the EAT Lancet Commission and to reduce by half food loss and waste (relative to a 2015 baseline). To make progress toward these objectives, the cities intend to work with citizens, businesses, public institutions, and other organizations to develop, within two years, a joint strategy for implementing these measures and incorporating that strategy into the cities’ Climate Action Plans. The strategies are to include baseline figures and targets relating to environmental, health, social, and economic benefits.
A food focus can be brought within existing regional networks (of Asian cities), such as the ASEAN Smart Cities initiative, as well as global networks in which Asian cities are strongly represented, such as the C40 Cities.

**Complexities of governing informality**

**Across Asia, the informal sector is prominent in many urban food landscapes, raising questions about its implications for urban food system governance.** As noted in Chapter 2, across Asian cities, the informal sector plays an important role in providing food access to urban households of various socioeconomic means, and for lower-income residents of Asian cities it is often a key source of food security. It is also a significant source of informal economic activity with all of the risks and inconveniences that can entail, as well as an important part of city culture. From a public policy point of view there are often concerns relating to food safety and environmental management. Many cities are unclear as to how to best monitor, regulate, or support informal food operators, and some are resorting to measures aimed at curtailing street food vending and other informal forms of food preparation and sale. This approach could well be amplified by responses to the COVID-19 pandemic.

**Though possibly well-intended, attempts at (forced) formalization have had limited short-term success.** Formalization has been a widespread objective of informal sector governance over the past two decades and one that has grown in importance since 2015, when the International Labor Organization endorsed the objective. Formalization is expected to and can result in benefits such as improvements in incomes, investment, working conditions, and tax revenues (the latter having a potential economic multiplier effect) (Joshi et al. 2019 and Rand and Torm 2012, both in Crush and Young 2019). However, the informal economy exists and thrives for a reason, and its benefits have widely been underestimated by formalization efforts.

**Repressive efforts to root out the informal sector from cities have indeed been mounted in low- and middle-income cities in every region.** The eviction of food vendors from streets and their forced relocation to designated markets have been widely observed in cities—to the point of being described as a “defining feature of the informal food sector” (Crush and Young 2019). Efforts to beat back informal sector activity are often couched as contributing to the broader policy objective of formalization. The success of such efforts, however, has potentially been compromised by the tendency of local authorities to actively pursue formalization through repressive means that do not address the root causes of informality.

Yet, repressive approaches are increasingly seen as ineffective at best, and more likely harmful to all those involved—including sometimes more formal parts of the food economy. Shutting down the informal food sector does not suppress its root causes. Attempts to remove it, tumor like, can cause it to “metastasize,” driving it to reappear under new forms including ones that are less valuable to informal merchants and their patrons and more problematic for the wider city.55 With its low barriers to entry, adaptability to consumers, and entry-level prices, the informal food sector can indeed be a key source of income and food for the less affluent residents of cities. In Asia, the informal food sector is also a major distributor of fresh foods for cities at large, connecting urban residents of all means to foods supplied by the broader city-region food system.

**There is scope to pursue more supportive and holistic strategies and to move away from repressive and inconsistent ones.** Holistic strategies can be ones that, on the one hand, “push” the informal sector to perform better and, on the other, increase the “pull” of the formal sector, making it more attractive or less threatening to informal players. Push strategies can be supportive rather than repressive, aiming to improve the informal sector’s operating environment and to address a range of demand- and supply-side constraints. Helping the informal sector to perform better (including by mitigating its risks) and fulfill its socioeconomic functions more fully may effectively help prepare informal players to compete in and transition to the formal economy.

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55 It is possible that formalization efforts have also been weakened by the unfounded belief that to be informal is to be ungoverned. It is reportedly common for local authorities to (unintentionally) send the informal sector mixed signals through sets of inconsistent policies that translate, for the informal sector, into a mix of support, repression, and neglect. Such policies may reflect a lack of awareness on the part of local authorities that the informal food sector is affected by policies relating not only to the informal sector at large, but also to the formal food economy (Crush and Young 2019).
Pull strategies include measures to increase incentives (reduce the disincentives) for the informal to formalize, with points of interaction between the formal and informal sectors serving as potential points of entry. Informal sector players are often relied upon by those in the formal economy to cheaply and effectively provide inputs or distribution services. Moreover, the informal food sector is affected by policies relating not only to the informal sector at large but also to the formal food economy. One implication is that addressing informality need not imply only targeting informal food system actors directly, but also parts of the formal food sector that interface with it as entry points. Box 4.7 summarizes the holistic strategy that Singapore used to monitor, upgrade, and eventually formalize its network of street food vendors, or “hawkers.”

At the national level, India has been more proactive than many countries in its efforts to integrate street vendors into policy making processes, and its approaches are applicable and even mandated at the municipal level. In particular, a 2014 law actively encourages the integration of informal vendors and their interests into municipal planning efforts. It specifically requires cities to establish town vending committees (with at least 40 percent street vendor participation) to carry out surveys of vendors, ensure that all existing vendors are accommodated in vending zones, and issue certificates of vending. By recognizing “natural” (open air) markets as “places where sellers and buyers have traditionally congregated,” the law also precludes the relocation of vendors to places that are inaccessible and have low levels of pedestrian footfall. Earlier, in the lead up to its adoption of the National Policy on Urban Street Food Vendors in 2004, the Government of India put in place a task force on street vendors which included associations representing street vendors as well as mayors, police officials, and urban development officials. In part due to these earlier actions, the government is able to announce a special response for street vendors as part of the economic stimulus package announced earlier in May 2020.

Engaging with the informal sector in these potentially more constructive ways requires cities to adopt a flexible stance in relation to informality. Many of the approaches described imply a willingness to recognize the informal sector’s role and value to various stakeholder groups, as well as a willingness to work within the grey area implied by informality. Supportive interventions in particular may paradoxically appear to be entrenching the informal sector by giving it greater recognition, resources, and legitimacy. Yet, together, supportive push and pull approaches may help pave the way for gradual, spontaneous formalization to occur, while sparing the multifaceted costs of ineffective crackdowns. Further examples of potential supportive interventions are discussed later in this chapter.

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Box 4.7: How Singapore formalized its street food businesses

In the 1960s, some 40,000 hawkers plied Singapore’s streets and riversides selling food and other low-cost goods and services. And while they were widely patronized, their operation raised serious food safety and environmental concerns. To tackle this situation, a licensing and inspection scheme was introduced; but the main strategy to formalize Singapore’s street food business was to relocate these vendors to hawker centers. Fifty-four of these were built in the late 1970s and another 59 in the early 1980s.

During the 1980s and 1990s, a “regulate and educate” policy was used to improve hygiene practices even as hawker centers came increasingly to be recognized as playing important social roles in communities. In 2001, the government allocated US$420 million for infrastructure improvements under the Hawker Centre Upgrading Program. Some hawker centers were completely rebuilt, and most acquired central freezers and cleaning areas. By 2014, 109 centers had been upgraded to accommodate 6,000 vendors. Among other things, hawker centers have loyal local customers and are a tourist attraction. In 2016, two hawker stalls were awarded a Michelin star.

Today, Singapore’s hawker centers are managed and overseen by the National Environment Authority. Its objective for these centers is for them to be “vibrant, communal spaces, offering a wide variety of affordable food, in a clean and hygienic environment.” Here, the authority’s mission includes overseeing stakeholders, developing and implementing policies for the hawker sector, maintaining the infrastructure of existing centers, and developing new centers. The authority also manages the assignment and rents for tenancies, licenses, and public relations.
DOING MORE AT THE CONSUMER LEVEL

Cities in Asia face significant opportunities to shape and influence consumers' food choices. Part of the opportunity they face stems from the fact that urban food landscapes and urban landscapes more generally are in rapid flux across much of low- and middle-income Asia. Cities also enjoy proximity to urban populations—to communities—to develop tailored, user-centered, adaptive interventions, and to support their needs directly. Cities can for example use behavior change campaigns, social welfare programs, fiscal measures, and institutional food procurement programs to do so.

Downstream (consumer-focused) interventions can have various purposes. They include:

- Enabling better dietary patterns to prevent the costly rise of diet-related chronic disease.
- Empowering consumers to avoid unsafe food and avoid its negative health impacts.
- Eradicating undernutrition to ensure social justice, social stability, and economic health.
- Ensuring the social protection of vulnerable urban populations through functional safety nets.
- Promoting ecofriendly consumption to reduce food systems' environmental externalities.
- Promoting food choices that also support the local food economy.

Cities can enhance healthy food access and consumption by teaching and training residents to do better by themselves. They can help teach consumers about dietary health and nutrition and how to put that knowledge into practice, by giving them the knowledge and tools they need to shop affordably, access food safety programs when applicable, cook and store food that is nutritious, healthy and safe, and so forth. To ensure their relevance, efforts (educational or other) need to address the full spectrum of consumers, and many cities are increasingly in a position to integrate nutrition education into school and various educational curricula. New parents may benefit from learning about what and how to feed their infant in the first year; and children may benefit from learning about the benefits of eating fresh fruits and vegetables. People already affected by diet-related chronic disease may benefit from learning how to manage or reverse their specific conditions through diet, including practical ways of replacing their entrenched habits with new ones.

Cities can also take measures to change consumer behavior that may or may not require consumer knowledge and awareness of dietary health. Knowledge is often insufficient on its own to motivate and get people to do even what is in their power to change (economic or otherwise), and in some contexts, unhealthy eating habits are strongly entrenched and buttressed by unhealthy food cultures and commercial interests aligned with these. To get around this and other behavior change challenges, social marketing, branding, and other interventions appeal to principles of social psychology. School programs integrating hands-on experience growing food may increase children's acceptance of or interest in consuming fresh fruits and vegetables. Programs of this nature exist across many countries and cities. Bhutan made classes on gardening a systematic part of schools' curriculum in 2002, but it has been more common, elsewhere, for authorities to incentivize, fund, and otherwise support initiatives of the nonprofit sector, sometimes within the framework of public-private partnerships. Programs teaching nutrition can be more or less hands on, integrating not only nutritional science but also food shopping and cooking skills, and social elements. Such social marketing-inspired techniques have the potential to enhance the effects of a variety of interventions bent on empowering consumers to act on knowledge. Programs need not always aim to enhance targeted audiences' nutritional knowledge however, but only to push them toward healthier food choices.

Pricing policies including taxation have been found to be an effective approach to reducing noncommunicable disease risk factors such as tobacco and unhealthy diets, and cities worldwide are putting this approach to the test. The range of pricing interventions that cities can undertake is sometimes

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56 In Malaysia, nutrition education is not only part of the formal national curriculum but also reportedly integrated into the extracurricular activities of schools, sports clubs, and youth organizations.
limited by their authority or capacity to tax or otherwise influence the costs of food. Cities also have little power over neighboring jurisdictions and cannot prevent residents from buying untaxed items there. That said, cities have been among the pioneers of food—or rather beverage—taxes, along with a number of national governments. Beverage taxes are saving lives and reducing disease at a population level. At the same time, they (or other potential food taxes, such as ones on animal source foods) cannot be expected to solve dietary challenges on their own.

**Interventions targeting public or publicly influenced institutions involved in food delivery may be a major avenue for cities to influence dietary health.** Institutions involved, or potentially involved, in food purchasing, preparation, and service include schools, hospitals, office buildings, universities, and prisons. These institutions’ wide reach of consumers gives them the ability to directly influence the diets of many. In addition, the high volumes of food they handle mean that changes in their practices may spill over into the food system more broadly. The hope is that demands placed on suppliers to public institutions, such as restrictions on the use of certain ingredients like added sugars, sodium, and fats, or requirements to serve fresh fruits and vegetables and legumes and to meet food safety and quality standards, may lower the cost and other barriers to their replication in less specialized markets. Municipal-level institutions stand to have even greater influence by pooling their purchasing power, not only within cities but also across cities.

**The levers of municipal authorities to shape institutional food procurement are varied.** Instruments at cities’ disposal include but are not limited to executive decisions relating to food spending, regulations, contractual and licensing requirements, conditional funding, public recognition, convening efforts, laws, and prizes. Additional program design variables include the pricing, timing, placement, and publicity of services; the focus on upstream measures relating, for example, to cooking and storage facilities, food service staff capacity, and supplier relationships; and the inclusion of companion food marketing and educational measures. The choice of instruments is partly informed by municipal authorities’ formal and informal relationships with the institutions operating food services. Institutions may be directly controlled or funded by the city government, more loosely beholden to the city government for other reasons (dependent on permits, contracts, licenses, land leases, and so forth, or simply subject to city laws and regulations), or willing allies of government authorities looking to have a positive impact on public health.

**Cities can also encourage employers to develop worksite wellness programs that increase access to healthy foods and otherwise contribute to healthy eating.** Such programs can make important contributions to ensuring employees’ access to healthy eating options during work hours. They can for example ensure that employees have sufficient time to eat healthily, subsidize healthy food options to make them more affordable, and support breastfeeding in various ways, allowing mothers to follow through on recommended feeding practices. Cities can not only offer employers material incentives but also help them implement programs by providing them nutritional guidance and templates that minimize the upfront investment needed to put such programs in place. Singapore, for example, encourages employers to establish workplace nutrition programs. The government provides employers guidelines on developing organizational policies and relies on vetted private programs to provide relevant training and services. Singapore’s AIA Vitality wellness program rewards consumers for making healthier choices, including at supermarkets: Subscribers receive up to 25 percent cashback on the healthy food items they purchase. Several Indian cities are also promoting worksite programs around safe and healthy eating.

**Cities are sometimes involved in the implementation of national safety net programs involving the distribution of food or vouchers to food vulnerable households.** Designed to help people in the short run, they are not designed to address the root causes of food access challenges. Food banks and soup kitchens have been used at city level throughout the world to distribute unused food to those facing food access challenges including low-income, elderly, and physically impaired residents. Food banks use diverse models to collect surplus food from grocery stores, farms, and manufacturers, and redistribute it to families within the local community. Cities in Brazil, Colombia, and Mexico have developed government-run community dining rooms or low-cost restaurants to serve nutritious meals prepared with locally sourced food at subsidized prices.
In many countries, food banks and soup kitchens are largely managed by civil society and faith-based organizations with various forms of public sector support. Food banks can be encouraged to focus on securing fresh produce to distribute to those in need while providing classes on how to make nutritious meals using available ingredients. Applying these programs in urban slums is especially challenging due to the high mobility of target populations and the lack of social services that can be leveraged to administer programs.

The private sector, if given the right incentives and support, can help solve many food access challenges on a commercial or quasi-commercial basis. One way for city authorities to approach food access problems is by supporting food business entrepreneurship around the themes of food access and sustainability. As noted, some of the initiatives described above are ones that have been driven and funded by private sector actors including social entrepreneurs, and their inclusion in this section reflects the potential for the public sector to support them in more or less direct ways. Innovation support programs such as business accelerators and competitions can themselves be private sector ventures—and in high-income countries, they often are. Nonetheless, government can play supportive roles, especially in early stages, by providing funding and sometimes legitimacy to new ventures and by leveraging its convening power.

Cities can be experimental grounds for innovative programs and municipal authorities can support them indirectly in various ways (financial, regulatory, network-related, and others). In Singapore, a social enterprise called the NTUC Foodfare Co-operative has run a program since 2010 that supports food entrepreneurs start businesses—food hawking, institutional catering, and food manufacturing ones—that cater to low-income residents. In South Africa, in 2009, a private health insurer had a program that offered its members cash-back rebates on grocery store purchases of healthy food items such as raw or minimally processed fruits and vegetables. Healthy food item purchases were recorded electronically at checkout and signage was put in place to guide shoppers to eligible foods. In Tokyo, following investments to elevate train tracks to relieve congestion, the space underneath them was opened up for alternative uses. Tokyo salad is a project of the Tokyo metro system to use hydroponic farming to grow vegetables in these spaces.

Some cities have proven their openness to innovative “business” models rooted in urban poverty and informal sector realities. Pune, for example, is among a handful of Indian cities that have embraced informal recycling efforts in municipal solid waste management schemes. This model potentially has direct relevance to food system planning considering the significant if not leading contributions of food to both organic and inorganic urban waste (via packaging as well as food itself).

Beyond improving consumer access to nutritious foods, there are many initiatives that cities have pursued or could pursue to empower consumers to make more informed decisions about food safety. Those decisions relate to the food they buy and how it is prepared, stored, and handled. Cities in India, for example, are closely involved in the implementation of programs initiated by that country’s Food Safety and Standards Authority to promote improved food safety in schools, workplaces, hospitals, and places of worship and to involve consumers in the crowdsourcing of information on potential food safety infractions by food business operators. Voluntary food safety certification and labeling schemes are being increasingly applied in Asia to address major information and consumer trust issues. For example, Chinese cities provide support and oversight for that country’s safe food, green food, and organic food labels. Leading Vietnamese cities are among the players supporting the Ministry of Agriculture and Rural Development’s safe vegetable production support and labelling program. Other examples are cited below.

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58 Informal recycling has emerged as a global movement in the past 20 or more years, even boasting a Global Alliance of Wastepickers. This organization wishes to see greater acknowledgment of these “unsung heroes” of urban recycling and advocates for their fuller integration into evolving urban solid waste management systems (de Azevedo et al. 2018).
Cities the world over are facing a dietary health crisis—a crisis manifest in the rising burden of malnutrition and diet-related noncommunicable disease. Yet the evidence available to cities on how best to address it is a glass half empty situation. New evidence is emerging from middle- and high-income countries on promising approaches, pointing to potential starting points for cities looking to stem the progression of diet-related disease. Much of the evidence points to the effectiveness of various interventions aimed at dissuading the consumption of ultraprocessed foods—such as the adoption of taxes on sugar-sweetened beverages, food warning labels and other labeling mandates, restrictions on advertising and marketing, and reformulation requirements. However, interventions of this nature are unlikely to prevent ultraprocessed foods from becoming the new staples of Asian urban diets. That is, cities will not be able to reformulate, label, tax, restrict, or even exercise their way (back) to healthy whole food diets. This limitation of existing know-how to prevent an undesirable outcome points to the need for experimentation with measures that will increase the availability, affordability, and appeal of truly health-promoting foods.

Given resource and data scarcity, the best mix of approaches is an open question that cities will need to resolve individually—or collectively at the regional level. The partial evidence and experience gap illustrated above presents cities with a dilemma. To what extent should they privilege approaches that are more tested and possibly thought or known to be effective yet limited in their reach, or rather, focus on more pioneering yet less studied ones with more potential to be game-changing? Concretely, in the illustrated case, focusing efforts on applying a warning label system may come with blueprints from other cities’ experiences, yet may detract attention and draw resources away from potentially better suited and impactful measures, like ones that could structurally increase the availability and affordability of fresh produce. Potentially game-changing investments—for instance, in periurban horticulture parks, supportive measures for the informal sector players, bold multimedia campaigns, or novel food subsidy programs and social enterprises—may involve more risk, require more political courage, and necessitate greater mobilization of civil society.

Even where some evidence is available, it remains partial and inconclusive. Nutrition is one of the areas where evidence on intervention-effectiveness is the most bountiful, and even it remains very limited, particularly when it comes to interventions targeting slums and other challenging urban contexts. It also bears noting that no country has succeeded at reversing the progression of obesity and diet-related chronic disease, though some cities have taken bold steps to address them. In general, 15 years of experience with urban food policy has generated a wealth of ideas but limited evidence on the comparative cost-effectiveness or suitability of different food system interventions. Situations do not always lend themselves to controlled experiments and this is especially so when considering the complex and varied nature of urban food systems in Asia.

DOING MORE IN RELATION TO URBAN FOOD LOGISTICS AND MARKETING

At a time when they are in rapid flux, cities in Asia face a significant opportunity to shape urban food environments, commercial or otherwise. That opportunity stems from cities’ broad influence over the built environment as well as their leverage over certain aspects of the food marketing system. Urban food landscapes and urban landscapes more generally are experiencing rapid change across lower- and middle-income Asia, a situation that points to opportunities to mold those environments in ways that better conform to the aspirations of city residents. Those aspirations are certain to vary by city, reflecting their diverse geophysical, demographic, sociocultural, economic, and political realities and dynamics—as well as the diversity harbored within cities.

Engaging with urban food logistics and marketing to shape cities’ food environments may be motivated by multiple municipal goals. They include:

- Enhancing safe, healthy, and demand-responsive food access.
- Managing disruptions to food marketing-based livelihoods, especially in the informal sector.
- Reducing congestion related to the movement of food.
- Re-capitalizing city spaces and repurposing infrastructure.
- Reducing food loss and waste and managing organic and inorganic waste streams.
- Stimulating food business and job creation.
- Reducing tax evasion in the informal food economy.
- Promoting a city’s image by factoring in aspects such as orderliness, functionality, cleanliness, social justice, poverty, and cultural vibrance.

Food logistics and marketing is one of the key areas in which cities have a comparative advantage to intervene in the food system and have many instruments at their disposal. Interventions can be regulatory or subsidy-like in nature, and supportive or dissuasive. They can also target a variety of different actors ranging from grocery or convenience store chains to small independent fruit and vegetable stands, organized fresh food markets, independent food shops, and other types of food merchants operating within or outside the formal economy. Marketing-level interventions can also be used to target certain upstream and downstream actors indirectly, notably, urban farmers and urban consumers. Similarly, supportive measures and investments can take on many forms.

Cities can use urban planning and related investments and regulations to indirectly shape food marketing environments supportive of adequate and healthy diets. Some cityscapes are evidently ones more conducive to the development of fast food chains, convenience stores, and on-the-go eating than others, just as some are more conducive to the development of traditional markets, small food businesses, and social congregation and eating formats than others. The width of roads, for example, is a feature of city landscapes that is understood to influence the speed of traffic flow, walkability, and ways in which space is used, all features that have a bearing on food purchases and consumption. Mixed-use zoning that allows food retail to be collocated with residences can also influence shopping and eating patterns. Public transportation systems can similarly condition how, and how fast, people can access food markets, how much time people have to eat, and the nature and size of food retailers. Some cities, like Nanjing in China, have deliberately worked to ensure that all residents are within a short distance to a food market.

Asian cities can use zoning and licensing rules to help ensure that healthy food is available and unhealthy food kept at bay. Zoning rules are one lever cities can use to restrict the commercial operation of certain types of business, including those known to be vehicles of unhealthy ultraprocessed or fast foods. Licenses typically address sanitation and food safety but they can also be used to promote healthy or restrict unhealthy food access. Although dietary health has not been the impetus in most cases, some policy makers have used licensing rules to try to limit or shape supermarket and convenience store growth, which dietarily, has been a double-edged phenomenon. Cities can also use licensing to incentivize food businesses to shape formal food retailers’ practices and guide them to supply and promote healthy foods. Licenses could for example require that food stores supply and saliently position a variety of minimally processed plant-based foods and meet basic food safety requirements in order to start or continue operating.

The city of Seoul has used zoning to keep vendors of unhealthy foods at a distance from schools. In 2012, a regulation establishing “green food zones” around schools went into effect. The regulation prohibits the sale of high-calorie, nutrient-poor foods deemed unhealthy by government standards within a 200-meter radius of schools. It also requires the sale of safe and sanitary food within the designated zones. The prohibited food items include many snack foods, frozen desserts, gimbap, sandwiches, bread products, hamburgers, and pizza. A study found that, as of 2012, Korean school children’s patronage of fast food outlets was lower in zones where

59 In Baltimore, establishments are assigned food safety risk ratings based on what food they sell and how it is prepared and served. Food establishment inspections are based on risk ratings, but also driven by complaints. High-risk establishments are inspected three times per year, medium-risk establishments twice per year, and low-risk establishments are inspected once every two years.

60 The penetration of supermarkets and convenience stores in urban settings has potentially negative effects on diet quality. On the one hand, these types of food retailers can make a safer and more diverse diet available and accessible to more people. On the other hand, they can encourage the consumption of energy-dense and nutrient-poor processed foods (Hawkes 2008). Meanwhile, a recent clinical trial showed that consuming ultraprocessed foods led people to consume significantly more (about 500 more calories per day), even holding the nutritional composition of the foods they ate constant, leading to short-run weight gain (Hali et al. 2019).
their density was lower (Joo, Ju, and Chang 2015). This finding suggested the potential for the green zone to have an effect on children's out-of-home food purchases.

In adapting this and other types of interventions, Asian cities will have to contend with the reality that much of the food sector lies outside the formal economy. Among other things, caution is warranted to avoid inadvertently dissuading or disincentivizing food businesses from operating formally. There may, for instance, be ways for cities to adapt instruments like licensing incentives to informal sector realities, even as they embrace more inclusive and supportive forms of governance.

There are challenges associated with widespread food business informality yet also major risks related to trying to suppress informal activity. Challenges associated with informality include tax evasion, congestion, messy markets and image problems, unsafe food, and unhealthy snack food. Risks of disbanding informal activity, however, include disruptions to food sector livelihoods and safety nets, the loss of affordable fresh and prepared food markets (and their replacement by convenience stores and fast food chains that may be conduits for ultraprocessed foods and unhealthy eating habits), and the erosion of local food culture. Weighing these two sides, most Asian cities will benefit from finding ways of engaging with the informal food marketing sector constructively. Box 4.9 provides a summary of suggested best practices for approaching the informal food marketing sector.

**Box 4.9: Suggested best practices in approaching the informal food marketing sector**

Although there are few well-documented examples of their holistic use, a number of approaches are considered best practices. For example, cities can help informal vendors improve their connections with customers, suppliers, and distributors, access capital, take up technology, and, generally, grow and upgrade their businesses. Cities can co-fund or arrange for the provision of business support services, training, and capital; and offer space to vendors wishing to formalize or leave the street.

**Cities can help promote and improve transportation to designated informal market areas and invest in food market upgrades.** More generally, investments in physical infrastructure and services in and around food markets, including electricity, water, drainage, waste management, transportation, and more, can improve the experience of customers and vendors alike, helping business as well as the potential for tax collection. If trust can be established, and benefits demonstrated, some taxes and fees can be collected to fund supportive programs.

**Cities can also help informal sector players organize collective action, thus enabling them to better diagnose and address their shared challenges, including supply chain inefficiencies.** For example, cities can work with associations of informal sector actors, and in some cases help broaden the membership and representativeness of such organizations in contexts where they are weak or nonexistent. Associations can help policy makers understand the nuances of informal sector challenges, develop supportive programs, including by building trust and buy-in (a key challenge in dealing with informality), and help realize economies of scale in areas where uncoordinated, small-scale economic activity are beset by inefficiency. For example, in Cebu, the Philippines, an association of street vendors in place since 1984 is in regular dialogue with city authorities and has become a core stakeholder in planning and policy making processes. The experience of Ahmedabad, India, also points to the benefits of working with street vendor associations to find sustainable solutions. At the national level, India has been more proactive than many countries in its efforts to integrate street vendors into policy making processes.

**Cities can progressively hold informal sector players to higher standards.** Cities could create clear regulatory frameworks for informal food vending that include provisions for tax and fee collection. It has been proposed that informal sector vendors should be able to qualify for and obtain licenses under reasonable conditions, and that they should be encouraged to meet standards that prioritize health and sanitation. The FAO’s Healthy Street Food Incentives pilot program has sought to test and prove this concept in Accra and Dar es Salaam using lottery scratch cards to motivate vendors to participate. In general, since measures of this nature potentially raise barriers to entry—the absence of them being a defining feature of informal markets—their success demands a deep understanding of informal sector realities, authentic dialogue to define mutually preferred directions, and supportive complementary policies.

Contd...
Developing clear and consistent policies or guidelines on the planning, development, ownership, and management of informal markets can be a way for cities to increase their confidence in capital-intensive investments to serve the informal economy. Among other things, such policies or guidelines can help ensure that, across interventions, informal actors’ inputs and realities are factored into all stages of decision making. South Africa has established a centralized hub to coordinate the implementation of all informal sector programs and to serve as a resource for informal businesses seeking advice and assistance.

Inclusive governance is of particular practical value in relation to the informal sector. Without deep involvement of informal sector players, investments, services, and licensing schemes are unlikely to work out as planned. To be realistic and sustainable, food market development and investment plans need to be guided by extensive and continuous input from all stakeholders involved, including consumers and informal vendors themselves. Consultations carried out for good form have proven ineffective at best and often wasteful and harmful.

Source: Based on Crush and Young (2019).

Carefully designed efforts to relocate informal food vendors have also sometimes fallen short of expectations because they failed to account, in sufficient detail, for the needs of either vendors or their patrons. Examples of such efforts come from the mid-sized Indonesian cities of Jogyakarta and Solo, both of which received positive media attention for having removed street vendors from public spaces, supposedly to popular acclaim. However, informal vendors returned to the streets after being relocated to upgraded market sites. While the new market sites offered to vendors provided better infrastructure for food preparation, storage, sanitation, parking, connectivity, and even worship, they failed to attract or retain clientele. Reasons included low connectivity between the markets and pedestrian circulation routes, the markets’ low visibility from the street and poor integration with their surroundings, and generally lower convenience.

Asian cities will likely benefit from developing new food wholesale and logistics models able to support the disparate needs of a diversity of food retailers. A common trajectory for cities in high-income countries as they grow and mature is to move wholesale food markets from densely populated parts of the city where they cause increasing congestion and other problems, to city peripheries. However, the successful relocation of wholesale markets from central to peripheral parts of cities—or from more to less densely built-up and populated parts thereof—assumes that an adequate number of market users have the capacity to relocate their business dealings to wherever wholesale markets are moved. Inevitably, not all users are able to make the transition and wholesale market relocation has the potential to cause a shift in cities’ food supply, privileging large and well-organized actors over small ones of more limited capacity and means. Inducing such a dynamic can result in a mix of benefits and disadvantages.

Experience with such transitions shows that there are typically winners and losers but that the market adjusts. However, experience with such transitions comes predominantly from cities with high rates of supermarket penetration and formality. Multitudes of small vendors operating informally in Asian cities would lack access to the specialized vehicles and trained staff they would need to carry merchandise between their suppliers and customers in the event of wholesale market relocation. And such trips would add to congestion problems in cities already overwhelmed by traffic and gridlock. A failure to foresee and plan around such challenges could contribute to decimating informal food operations. This outcome could, among other things, leave large swaths of consumers in Asian cities unable to access affordable healthy food.

Investments in wet market upgrades may be one way to maintain the relevance of these important food retail venues, enhancing their utility while addressing their downsides. The latter include unsafe food handling and inefficient or noisome uses of space, which can in turn detract from city image and investment. Investments can address their need for clean water, waste management, transportation and accessibility, energy and cold storage, and softer needs relating for example to standards and metrology, dispute resolution.

61 The involvement of national governments in developing food marketing models, or blueprints, for cities of various sizes and circumstances can help ensure their coherence and interoperability within and across cities, while bringing down the cost of city intervention. Indeed, having blueprints to follow can save cities from having to reinvent the wheel and from taking the costly missteps involved in trial-and-error approaches. Such blueprints could include models relating to the financing, siting, operation, regulation, and oversight of wholesale markets—including roles of the public and private sectors.
market information, and even professional training and licensing. Support for collective action on the part
of small food retailers operating informally—whether independently or in larger wet markets—may open up
possibilities for integrating these operators, and the vital functions they serve, into modernizing wholesale
marketing systems. Bangkok’s Or Thor Kor market is an impressive example of a market operated by a state
enterprise (Marketing Organization for Farmers) that was set up to be a prototype of a modern fresh market.
Although prices there are higher than in other markets, hygiene and food safety standards are also higher and
the location attracts tourists and locals alike.

Chinese cities have been especially active in the planning of wholesale and retail market locations and
management. Starting in the 1990s, China’s national Shopping Basket Program involved lower-level authorities
in building out a food distribution system, involving thousands of wholesale markets all over the country, to
connect farmers, dealers, and consumers. The program held local authorities to centralized standards that
ensured that urban residents would retain or gain access to fresh food markets throughout the process of
formalization. The case is also interesting because different approaches were used by different municipalities
to apply the standards. In the city of Fuzhou, for example, supermarkets largely replaced traditional food markets
whereas in Shenzhen, fresh food markets were modernized in downtown areas while supermarkets were
directed to areas of the city which were being newly developed (Zhang 2007). Similarly, in Hangzhou, priority
was given to upgrading the infrastructure of fresh food markets, though supermarkets were also embraced as
an alternative (Zhou 2018).

One way to address healthy food access challenges is by addressing residents’ difficulties transporting
themselves to food retail locations, and the growth of food delivery and ride-sharing services can help meet
this challenge. In China, scooter food deliveries have become ubiquitous with an estimated 400 million people
actively using such services each month in 2019, and the online food delivery market having become worth
over US$86 billion (CNY 600 billion) (Trustdata 2019 in Yang and Liu 2020). In Southeast Asia, Indonesian ride-
hailing company GoJek has offered food delivery services in Jakarta since 2015, and as of 2019, had expanded
into over 200 cities in the region (GoJek 2019). And, responses to the COVID-19 pandemic including lockdowns
and business-support measures (such as those for business delivery services in Singapore) have potentially
seeded an expansion of private sector online solutions.

However, while most Asian countries have put in place laws and regulations pertaining to overall
e-commerce, only China, India, and Indonesia have elaborated regulations for food e-commerce specifically.
With the rapid expansion of food e-commerce in the midst of the COVID-19 pandemic, this segment of the
urban food commercial landscape has far outgrown governance arrangements. There are growing concerns
about online operators’ awareness of and compliance with food safety, quality, and food labeling regulations;
uncertainty about needed procedures for food product (and therefore problem) traceability; and questions
about the accountability of different parties (Food Industry Asia and Kantar 2020).

In both formal and informal market settings, municipal authorities across Asia have an important yet often
unrecognized role in addressing emerging food safety risks—especially in their prevention. More often than
not, it is municipal departments that are responsible for the inspection and oversight of wholesale and retail
markets and food businesses and vendors and the reporting of foodborne disease among the urban population.
However, these functions are often under-resourced. Municipal food safety units commonly focus their day-
to-day efforts on policing the limited pool of larger formal sector food enterprises and otherwise react to food
safety outbreaks and other negative events. With a growing recognition of the public health and commercial
costs of unsafe urban food, municipalities now need to invest more and more smartly in food safety capacity,
to focus on preventive rather than reactive measures, and to invest as much effort in enabling and facilitating
improved food vendor and provider practices as in enforcing regulatory infractions (Jaffee et al. 2019).

Intervening in the urban food marketing system is one broad way in which cities can bolster urban and
periurban agriculture—to ensure safe and affordable fresh food supply. For many cities in developing Asia,
support for periurban farms may be a critical means of ensuring access to safe, fresh, affordable nutrient-
dense produce, thus preventing dietary disease in all its forms. Box 4.10 illustrates how cities can support the
Box 4.10: Examples of urban marketing interventions supporting urban and periurban agriculture

In China, Nanjing City made the development of retail channels for local products a key component of its support for urban and periurban agriculture. To specifically stimulate organic food production in the city’s periphery, Nanjing took to organizing a series of agricultural product festivals and exhibitions, including ones devoted to plums, grapes, watermelon, crab, and forest products (Renting, Naneix, and Dubbeling 2013). It has also guided and made significant investments in cold chain logistics infrastructure as well as in wholesale and retail markets (including wet markets) to develop the city’s capacity to market local agricultural products (Zhong et al. 2019).

The city of Bandung, in Indonesia, has been actively involved in developing marketing channels for locally grown products. The city’s “healthy markets” are reserved for regional producers selling their own products and must meet health and safety requirements. Growing demand for safe and local products in the city has led to the development of similar marketing channels including the city’s so-called Green Market, Small Market, Keuken Food Festival, and Bandung Agri-Market, the latter an initiative of the city council (Dwiartama et al. 2017). Another example, outside Asia, is the city of Rosario, Argentina, where the city made significant and sustained investments in the development of markets for organically produced local products.

While cities are not typically the authors of product standards, they can be actively involved in promoting their adoption and recognition among consumers. Hanoi’s efforts are illustrative. To support the actual and perceived safety of locally produced vegetables, the city of Hanoi has actively promoted three standards since the 2000s: VietGAP, RAT,62 and Organic. The city has promoted their adoption through investments in physical infrastructure, training programs targeting urban farmers in designated zones, and the analysis of safety conditions at farming sites (Pham 2017). Bangalore (India), Huairou (China), and Dhankuta (Nepal) are other examples of Asian cities that have promoted organic or safe production standards among local producers.

Municipal efforts to brand local products as a means of stimulating appreciation and demand for them have been less widespread. Japanese municipalities have been noted for developing local brand names for traditional and locally produced vegetables. Some of the best known among these brands are the Kyo and Kaga vegetables, named after the cities of Kyoto and Kanazawa, respectively. These and similar brands are similar to geographic indicators in that they are governed by standards that restrict the brand’s use to a small number of traditional vegetables that meet historical criteria and are grown using a number of traditional processes—although different standards vary in their specificity and stringency (Uchiyama et al. 2017). Developed during the 1990s in collaboration with local agronomists and stores, these brands are promoted by local authorities and groups as part of local revitalization efforts.

DOING MORE IN RELATION TO URBAN AND PERIURBAN AGRICULTURE

Engaging with urban and periurban agriculture may be motivated by a diverse set of municipal goals. Examples of such goals include:

- Protecting dietary health by protecting the supply of nutritionally vital fresh fruits and vegetables and minimally processed foods to residents through the protection of cropland
- Managing disruptions to the livelihoods and food supply of those reliant on urban agriculture
- Managing and possibly supporting the performance, environmental or otherwise, of de facto urban farming activities through urban extension and the like
- Supporting the development of marketing and value addition channels for local producers
- Leveraging farming as an inexpensive way of maintaining pervious space, good for storm water management, the offtake of waste, and the upkeep of green spaces
- Preserving farms for edutainment purposes (requiring a much smaller scale).

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62 RAT stands for Rau An Toan in Vietnamese, translated as “safe vegetables.”
The near-irreversibility of urban and periurban cropland conversion supports the need for careful analysis—at the city level and above—of its various implications and tradeoffs. For example, national or higher-level analysis is needed to understand the contributions of urban and periurban cropland to national and city-specific food security, factoring in geographic differences in cropland quality and potential, the relationships between the geography of production and food access and pricing, the environmental externalities of farming and land-use change, and food trade flows (Box 4.11).

**Box 4.11: Analyzing tradeoffs is important in urban food system policy: the case of urban farmland**

Urban cropland may, on the one hand, be of strategic importance to ensuring national or city-level food security within the constraints of environmental sustainability. On the other hand, it is not a foregone conclusion that urban food insecurity challenges are always best addressed by support for urban gardening or other forms of urban farming. Meanwhile, by assessing the role of urban and periurban agriculture in supporting the livelihoods and food security of low-income and especially migrant populations, cities may enhance their ability to more judiciously manage the potential socioeconomic consequences of any disruptions to urban food production.

Whether or not cities come to see urban agriculture as an activity they wish to protect or encourage in the pursuit of food security and other city goals, public intervention can be beneficial, at a minimum, to ensure that agriculture is practiced safely and for maximum benefit to the city. The continuation or disruption of urban farming can be a source of environmental and socioeconomic risk that warrants management. In general, by reflecting on the near- and longer-term functions or urban and periurban agriculture, cities can make informed determinations about how much space and support to dedicate to it. For example, more land and support will generally be needed to feed residents of a city than is needed to educate them in relation to food supply, engage youth, repurpose disaffected spaces, cool buildings, or maintain urban green spaces.

The integration of urban agriculture—and food systems more broadly—into planning lends itself to, and can benefit from, a multiscalar approach. The appropriate spatial scale for planning around UPA and food systems, from the neighborhood to the national (or higher) level, will vary depending on the nature of the questions at hand. A wider spatial scale can be useful to shed light on the big picture food security situation, since, overall, city food supplies are not limited to what is produced locally. That said, a smaller spatial scale can be appropriate for examining the supply of perishable foods, especially in contexts where logistics constrain a city’s ability to rely on perishable items from afar, as it can be for exploring food availability in scenarios involving transportation or trade disruptions. Urban food access issues may call for even more spatially focused analysis since adequate food availability at a city level will say very little about its accessibility to different parts and populations of a city. In general, a smaller spatial scale of analysis allows for more local granularity but does so at the expense of big picture elements (a highly local model might treat the rest of the world as one block).

Although the protection of periurban cropland is not the sole responsibility of cities—and cities rarely have full or direct control over periurban land-use change—its success generally requires their willing and proactive participation. Decades of experience with land protection policy point to political will and commitment to a course of action as being a stronger factor of success than any particular combination of instruments. Experience also supports that effective cropland protection rests on the use of multiple instruments in combination, including both direct and indirect measures, as well as carrots and sticks.

The integration of an agricultural perspective into planning can help cities identify and address urban development policies and practices that may unintentionally be increasing pressure on farmland. Integrating agricultural and food system considerations into spatial planning is probably necessary (though not sufficient) to ensure that strategic cropland is identified and saved from seeing its economic viability condemned. The latter can occur when cropland is bisected or atomized by transportation arteries, infrastructure, and other development.

**Cropland protection can indeed call for the removal of policies as much as the adoption of new ones.** For example, some municipal policies or practices may be accelerating the conversion of farmland by inflating
urban land and housing prices and fueling urban sprawl. Help from higher levels of government can be helpful or even necessary to protect farmland, as has been the case in China and Japan. One course of action for national governments is to establish incentives for municipal leaders to make cropland protection a higher priority. Planning on its own is seldom enough but can guide the selection of instruments suited to the task. For example, the city of Vientiane in Lao PDR developed a master plan in 2010 to protect its dwindling periurban farmland and forests. Yet in the years following the plan’s release, the conversion of such land for transportation systems or other uses continued on a rapid pace. The planning process evidently did not take full account of development needs and there was a disconnect between the entity designing the plan and those making decisions about urban development (Sharifi et al. 2014).

**Municipal planning and policies guided by the aspiration of compact urban design represent one indirect but no doubt consequential approach to the protection of periurban farmland.** The prevention of sprawl can help preserve agricultural land, while the careful use of urban land can enable food to be grown locally (Jenks 2017). Policies that can foster this orientation include ones relating to transportation and density. Fuel taxes, for example, have both empirically and theoretically been shown to induce more compact urban form and preserve open space (Creutzig 2014, Creutzig et al. 2015, both in Bren d’Amour et al. 2016). Instruments that have been used to support compact development and spare farmland by fostering density include clustered development63 and downzoning.64

**Siting infrastructure investments in ways that avoid disrupting agricultural activities is another indirect way in which authorities can protect UPA.** To the extent that urban development often follows lines traced by major transportation arteries as well as other physical infrastructure like water, sewage and power lines, careful planning of infrastructure investments can be used to spare existing farmland. For example, new investments can be planned so as to avoid bisecting productive farmland at the time of construction or in the future. Incorporating agriculture activities into new developments as outlets for neighboring farms, supply chains for local restaurants, hotels, and so on, could be part of the infrastructure planning process to both preserve and enhance agricultural activities.

**Urban growth boundaries and greenbelts offer more direct protections of periurban farmland.** By prohibiting or limiting new construction beyond a predefined urban fringe, they can be used to prevent urban expansion into periurban farmland. London was an early and successful adopter of this approach in 1945 (Millward 2006), building on ideas put forward in 1900. In Seoul, local plans adopted in 1966 and national legislation adopted in 1971 led to the designation of a greenbelt that now encircles the city (Dawkins and Nelson 2002) and within which development is prohibited, although the land is largely under private ownership (Kim and Choe 1997 in Dawkins and Nelson 2002).

**Additional more direct cropland protection policies, which are generally also needed, can draw from a well-developed toolbox of instruments.** A large number of instruments involve or derive from zoning rules and land transfer and development rules more generally. Overall, they function by designating areas, including agricultural ones, in which different land development, land market, fiscal, and other rules apply. In other words, they subject agricultural land to special treatment. Examples include right-to-farm laws, agricultural easements, restrictions on the subdivision of land, transfer of development right schemes, preemption rights on the sale of agricultural land, and special tax treatment schemes, among others. Box 4.12 provides a snapshot of the major

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63 Clustered development involves grouping new residences or structures (or subdivisions) in one area and can be used to spare surrounding farmland and natural landscapes. It works by moving development rights from an area to be preserved to an area proposed for the cluster. The density of development allowed in the protected space thus diminishes (to as low as zero), while that allowed in the cluster increases. In this respect, clustered development is akin to transfers of development rights discussed below. Clustered development can be dictated or merely incentivized by zoning codes. This approach requires careful management, however, as the juxtaposition of residences or offices with farms is prone to conflict.

64 Downzoning reduces the development density or intensity of a property, such as from one dwelling unit for every two acres to one unit for every forty acres; it also tends to reduce property value (Haight and Held 2011). Subdivision ordinances govern the division of larger parcels into smaller parcels. While they have limited power to protect farmland on their own, they can help maintain parcels that are large enough to be farmed viably. The review process they entail can help steer new development away from farmland and ensure that new developments are compatible with field drainage patterns and ecosystem services on which farms depend. Conservation subdivisions explicitly require that key resources such as active farmland and ecosystem services be identified as part of the approval process, and that they be given top priority.
approaches to periurban farmland protection that have been pursued globally. For illustrative purposes, two such approaches are expanded upon: preemption rules and agricultural investment zones.

Box 4.12: Agricultural land protection in the vicinity of cities: a well-developed toolbox

The protection of farmland in the vicinity of cities is an area of policy where there is considerable experience to learn from. The loss of periurban farmland has been recognized as a threat across many countries and there have been widespread attempts by municipal and higher-level authorities to contain urban expansion or manage its encroachment into farmland. The protection of agricultural lands has been a particularly prominent planning goal in a number of ‘crowded’ countries and jurisdictions, including Japan and China, and in high-income regions, the Netherlands, Germany, Canada’s Ontario and British Columbia, and Oregon in the United States. The following clusters of instruments have been used to protect periurban (or urban) farmland more or less directly:

- **Planning activities that curb pressure of urban expansion on farmland**: comprehensive planning that explicitly includes a view of farmland based on maps, surveys, stakeholder input and more, and farmland protection plans (and incentives for public authorities to plan around and protect UPA in the first place)

- **Measures used to pursue compact urban design in general (not targeted to farmland)**: density targets and incentives (including clustered development), supportive transportation investments

- **Land-use restrictions and prescriptions that protect farmland from atomization, in-fill development, and conversion**: urban growth boundaries, greenbelts, zoning, exclusive agricultural zoning, right-to-farm laws, agricultural easements, purchase or transfer of development rights programs, agricultural districts laws (voluntary enrollment), downzoning, clustered development and subdivision restrictions, and non-disruptive infrastructure investments (such as ones that avoid bisecting prime agricultural lands or disrupting water supply)

- **Land market and fiscal measures that curb market pressure to sell farmland for other uses**: right for farmers to preempt the purchase of farmland, fiscal measures leading to the higher valuation of farmland (special tax treatment of farmed land) such as use-value tax assessment, special inheritance tax treatment of farmland to facilitate its transfer, property tax reduction programs

- **Farm and food economy support measures that increase the value of farming**: agricultural economic development strategies that foster linkages to the nonfarm economy, various forms of farm sector support, including supportive marketing interventions, buy-local, and agritourism campaigns

- **Measures to increase the public’s appreciation of local farmland**: farm-related recreational activities, awareness campaigns, and public education

- **Development rules that compensate for farmland losses**: to offset agricultural land losses.

Preemption rules allow farming interests to prevent the purchase of designated (yet possibly abandoned or nonfarmed) agricultural land for nonagricultural development. The preemption approach circumvents the problem that, with limited means, smaller or less-well-endowed towns, or rural entrepreneurs, would not have the capacity to purchase land at market rates reflective of nonagricultural uses of land—to use or protect it. In France, preemption rules were put in place to not only protect agricultural land but also to increase its viability for farming. A collection of public interest (non-profit) enterprises, known by their French acronym SAFER (sociétés d’aménagement foncier et d’établissement rural), have the right to preempt purchases of agricultural land for farming purposes. Mandated into existence by law, these organizations are overseen by the ministries of agriculture and finance. Land that is preemptively acquired by the SAFER is sold or rented to agro-entrepreneurs for farming purposes.65

Agricultural investment zones are put in place to protect farmland both from conversion and from abandonment. An enhanced form of zoning used by the municipality of Beijing has involved the designation of urban and periurban zones that are not only made available for farming but are also the target of focused public and private agricultural investment. In the late 1990s, Beijing dedicated five zones to the development

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65 The SAFER’s participation in land markets also helps establish market transparency. Preemption is not the only way in which the SAFER acquires land to pursue its mission. In 2016, the SAFER’s 1,290 preemptive purchases accounted for 12 percent of the number of plots, 6 percent of the area, and 4 percent of the land value they collectively purchased that year (SAFER 2019).
of multifunctional agro-parks meant to support food production, educational programming, and tourism. Each zone has a distinct focus. The “inner urban core” focuses on gardening, landscaping, and exhibition (Cai 2014). The “inner suburban plain” specializes in recreational agriculture, attracting tourism, and also precision agriculture using smart technologies such as moisture monitoring and automatic irrigation. The “outer suburban plain” accommodates large-scale, modern agricultural production and processing, and the “mountainous zone” is expected to grow specialty fruits and support ecosystem services. Finally, the “regional cooperation zone” has been designated as that which ensures food security by bringing together farmers’ cooperatives and helping to ensure the quality of imports.

In general, land protection instruments are best considered in the context of the urban political economy and not assessed only at face value. A lack of cooperation on the part of landowners and land regulators who see their private interests threatened can, de facto, ensure the demise of land protection policies. In such instances, more flexible, less restrictive, or stringent policies can sometimes do a better job at protecting agricultural land than policies that, if fully implemented, would protect more land over longer periods. At the same time, land protection demands sustained vigilance to prevent capture of public government by business interests that are in conflict with those of urban communities.

Although city and other local authorities are typically involved, public sector interventions to protect farmland frequently involve—and are driven by—higher levels of government. In Japan the national government is heavily involved in containing urban sprawl to protect farmland. In China, too, the central government has increasingly involved itself in the preservation of farmland that it considers strategic from a national food security perspective—including by handing responsibilities and mandates down to lower levels of government. For example, China’s vegetable basket responsibility system has, since the 1990s, made mayors responsible for ensuring a secure supply of nongrain products to cities; province governors are responsible for ensuring the supply of grain products (Zhong et al. 2019). In the meantime, China has developed a much more encompassing system involving every level of government to broadly stabilize the extent of its farmland (Box 4.13).

**Box 4.13: Major land protection policies in China**

Between 1994 and 1998, the central government of China established strict administrative controls over farmland to prevent its conversion for nonagricultural use. The government adopted a comprehensive land-use plan that reflects long-term objectives and forms the basis for annual land-use plans meant to guide its implementation (Wang et al. 2010 in Zhang et al. 2014). National policy requires subnational authorities at every level, including townships, to formulate and abide by their own comprehensive land-use plans. These plans are meant to manage the conversion of farmland to nonagricultural uses and ensure that conversions are consistent with a set of rules.

Central among these land protection rules are the “basic farmland” and “dynamic balance” policies. They stipulate the protection of strategic farmland areas and the offsetting of farmland conversions, respectively. Under the basic farmland rule, land identified for conversion by subnational land-use plans must lie outside of zones designated as “basic farmland” for protection—and every village or township is required to have them. These zones designate the farmland that is considered to be strategic and must encompass a minimum of 80 percent of each jurisdiction’s cultivated land (Li 2014; Zhang et al. 2014).

The central tenet of the dynamic balance policy, also known as the “zero net loss” rule, is to require that conversions of cultivated land be offset by farmland reclamation, consolidation, or rehabilitation (Liu, Fang, and Li 2014; Zhang et al. 2014). Compensating measures are intended to leave behind an agricultural landscape of equivalent expanse and quality. Overall, the policy has been strictly enforced and upheld with respect to quantity but less so with respect to quality. Although implementation has been uneven, farmland losses have generally been compensated through farmland reclamation. However, farmland additions...

66 This likely reflects the advantages of growing fresh fruits and vegetables and other nongrain foods close to cities, and the wider expanses of land needed to grow grains cost-effectively. This system presumably creates an incentive for local officials to protect and support periurban farming to the extent that it is important to local food provisioning.
have not matched farmland losses in terms of quality and have tended to exacerbate farmland atomization (Liu, Fang, and Li 2014; Song and Pijanowski 2014; Xin and Li 2018). With implementation left mostly to local authorities, the siting of compensation projects has sometimes privileged minimizing land costs over ensuring farmland contiguity. In many regions, newly reclaimed lands are rapidly abandoned, returning to their pre-reclamation status (Xin and Li 2018). The policy is also understood to have driven farm encroachment into natural landscapes (Liu, Fang, and Li 2014) and increased pressure on ecosystems (Xin and Li 2018).

In general, China’s reliance on land reclamation and substitution to maintain overall levels of cropland has lowered the quality and viability of its agricultural land, leaving the country to face upward battles in relation to the protection of environmental health and sustainable intensification. On average, reclaimed cropland is less suitable for farming than what is being lost to cities, and farmers affected by this “swap” have had to compensate for the loss of high-quality land with greater reliance on irrigation water and synthetic inputs. These compensating measures may in large part explain why, as already noted, the aggregate environmental footprint of Chinese farms has generally increased (except for its GHG emissions) even though the environmental performance of existing farmland has generally been improving (except with respect to phosphorus pollution). Although cropland loss to urbanization is not currently the leading driver of overall trends in production and environmental impact, it is propelling a shift in the location of cropland nationally that has the potential to offset gains from improvement in farm management (Zuo et al. 2018).

**Making space for farming in and around the city (and including farming into city spaces)**

In a context of heightened competition for urban space, farming activities have been or are being priced out of many cities. Moreover, to the extent that they are crowded, polluted, and often organized to accommodate the secondary, tertiary, and residential sectors, cities’ physical and regulatory environments can be inhospitable for farming. This section offers some examples of how cities have tried to accommodate space for farming, and even to drive farming into urban spaces in certain cases.

**A number of cities have proactively sought to make space available to residents for farming.** In Japan, the Tokyo metropolitan government has run such a program since the 1990s, making both public and private plots available to Tokyo’s urban farmers. The municipality of Seoul started taking proactive measures in this direction in 2012, under the impetus of an incoming mayor bent on making Seoul an urban agriculture leader. Between 2011 and 2013, the number of city-subsidized farming plots surged from 100 to over 2,000 (based on Seoul Metropolitan Government in Korea Herald 2014). And in 2015, the city of Seoul committed to designating a special zone for farming activities in the city (Kim 2015). Part of the vision for the zone was to train city residents to become urban agriculture professionals.

**One approach cities can follow involves making municipally owned land available for farming.** They can make public land available for purchase or lease on condition that the land be used for farming (thus at implicitly subsidized rates). Cagayan de Oro in the Philippines has offered urban farming groups temporary leases of municipal lands that cannot be built on due to flood risk or the presence of electrical cables (Fages and Bricas 2017). Cities can also make public land available for farming by creating community gardens, with or without imposing access or usage fees. Many cities, including Cagayan de Oro since the early 2000s (Holmer and Drescher 2005), have designated green spaces as community gardens and established allotment systems that give households the right to farm a small plot of land. The city of Daegu, Korea, reportedly engaged thousands of citizens in harvesting rice paddies it established in busy parts of the city for “greening” and recreational purposes (FAO, ESTà, and City of Daegu 2018).

**To make private land in cities available for farming, authorities at the municipal or higher levels can use approaches that are more or less commandeering.** On one end of the spectrum, authorities can dictate that land be used for farming and purchase or otherwise claim land to mobilize it for farming. As discussed above, China has resorted to land reclamation on a large scale to maintain its farmland balance in the face of urban expansion. The national regulatory framework both directs and incentivizes municipal authorities to reclaim land for farming purposes and the business can be profitable for municipal authorities (Xi and Li 2018).
In Cagayan de Oro, authorities have reportedly required parts of slum rehabilitation projects to be set aside for community gardens (Fages and Bricas 2017). Alternatively, authorities can encourage private landowners to use or lease their private land for farming purposes, enticing them with tax, permitting, and other economic incentives. Cagayan de Oro has reportedly offered landowners tax incentives for farming (Fages and Bricas 2017). In Baltimore, in the United States, landowners benefit from a 90 percent credit on property taxes on condition that their properties are used for urban agriculture for a minimum of five years and produce above a minimum threshold of food.

Different approaches can be used to make space for farming in cities depending on the types of farming systems and landowners being targeted. Urban and periurban farming systems are extremely diverse and their spatial needs differ. Commercially-oriented periurban farms generally need more space (for longer) than community-oriented ones in the heart of a city, for example. In Rosario Argentina, this diversity of spatial needs has been reflected in the recognition of different types of agricultural spaces by city planning documents. In the past, city plans have foreseen 200 hectares of periurban land being used for intensive, commercially oriented farming and also agricultural uses of gardens and parks in the heart of the city. Meanwhile, landowners also have diverse profiles that city programs need to account for. As Japan and Singapore illustrate below, individual landowners can be sensitive to economic incentives couched in property and inheritance tax systems. Commercial developers can also respond to the (permitting or other) rules that govern what they can and cannot build on a property.

Japan has used a combination of approaches: having mobilized public urban land for farming in the past, authorities have more recently focused on creating incentives to keep private (household-run) farms in operation. Such efforts have partly been driven by national-level authorities. Starting in 1992, the government of Japan designated over 13,000 hectares of urban land nationwide, including 3,200 hectares in Tokyo, as “productive green space,” and offered landowners 30-year tax breaks in exchange for using the land for agricultural purposes (Nikkei Asian Review 2017). Recently, national authorities have taken measures to maintain agricultural uses of this and other farmland in cities. In 2017, national authorities intervened to facilitate the rental of urban land for farming purposes (The Japan Times 2017; Nikkei Asian Review 2017). These measures come at a time when the 30-year tax breaks are nearing expiry and aging farmers are selling or are bequeathing their land to nonfarmers at increasing rates.67

In Singapore, the government has encouraged rooftop farming activities by putting in place incentives directed mostly at commercial developers. This case illustrates how incentives to make space for urban agriculture can be embedded in permitting or other development rules and, specifically, how green space requirements can be leveraged to encourage urban agriculture at the project level. Since 2009, Singapore’s Landscaping for Urban Spaces and High-Rises, or LUSH program, has offered incentives to developers and building owners to integrate greenery into their spaces—something they are required to do when green spaces are lost in the development process (under a greenery replacement law). In 2017, in an effort to expand developers’ replacement options, the government recognized rooftop farms as counting toward replacement requirements (SURA 2017).68 The government also imposed denser greenery requirements on buildings with more intensive use.69

67 To entice landowners to lease their land to farmers, ministerial authorities made it easier for landowners to not renew a lease if they choose not to after its term ends (The Japan Times 2017). They also took steps to minimize the involvement of local agriculture committees in approving farmland leases and directed municipal authorities to approve urban farming projects that supply food to schools, engage in community-oriented activities, or host agricultural experience events (The Japan Times 2017). In addition, inheritance tax exemptions were put in place for urban farmland that continues to be used for agricultural purposes.

68 In a similar spirit, Shanghai allowed biodynamic farming to count toward the city’s goal of reaching 35 percent vegetative cover by 2020 (WWF 2012).

69 At the same time, authorities introduced a protocol for assessing buildings’ green plans. The so-called Green Plot Ratio framework measures vertical as well as horizontal green cover, opening the possibility of counting green walls and vertical farming structures toward requirements. Meanwhile, green space requirements are just one way in which authorities can write building codes to encourage developers to make space for farming. In Singapore, to further encourage this use of rooftops, authorities committed to granting gross floor area exemptions for the space taken up by mechanical and electrical equipment relocated from rooftops to other parts of buildings.
**Supporting the development and the sustainable intensification of UPA**

**Efforts supporting the development and the sustainable intensification** of agricultural production are often companions to spatial interventions involving the protection, designation, and accommodation of periurban farmland and other space for farming. By contributing to increasing the size, value, and efficiency of farming and other agricultural activities, they can help expand the UPA sector but also compensate for the concession of some farmland to development. Cities support UPA through a variety of means including the provision of infrastructure, advancing research, providing farm and farm business extension, and supporting pertinent business support services.

**One way in which municipalities can support urban agriculture is by developing infrastructure and services that support urban farms’ access to inputs.** Urban farms, like any others, need access to water, soil, nutrient, and sometimes electricity resources. While food from urban farms may not have far to travel to reach consumers in cities, resources sometimes need to be carried to urban farms with help from the built environment. Whether they invest directly or guide and facilitate the private sector to do so, municipal authorities can be involved in developing infrastructure to carry resources to urban farms and ensure the safety of resources that farms are accessing. To address water needs, for example, cities can invest directly or facilitate and guide private sector investment in water harvesting, testing, treatment, and conveyance infrastructure that can be used for irrigation or aquaculture. In particular, with the right infrastructure and standards in place, agriculture is a potential off-taker of partially treated ‘grey’ water.

Cities can also help ensure that foods grown in town are safe to eat by offering services to test and decontaminate urban soils. The needs of different farming systems vary by farming system and location. Aquaculture and horticulture operations are intensive users of water and nutrient resources, for example, and controlled environment farms are heavy consumers of electricity. Urban farms’ access to clean and adequate resources also varies. In underserviced urban areas in particular, municipal investments and oversight can support urban farming by enabling safe uses of urban runoff and waste streams. Urban farmers in underserviced parts of cities often use contaminated urban runoff and residential waste streams spontaneously to meet their water and nutrient needs. In more developed urban contexts, urban farmers need support and encouragement to do so. In either case, municipal authorities can intervene to minimize the risk of foodborne disease that arises with the use of potentially contaminated inputs. Authorities in Kolkata, India, have long supported well-established sewage-fed aquaculture operations in the city—overseeing the safe use of domestic and industrial waste waters over thousands of hectares of ponds (Cofie and Jackson 2013). Beijing has also promoted the safe and widespread use of wastewater in UPA (Ji and Cai 2008). One advantage of using wastewater is that it can deliver some or all of the nutrients that are needed to grow seafood or crops.\(^7^0\)

Cities can support urban farms’ nutrient and waste management needs by developing organic waste management and composting services. Composting programs can be developed in varying degrees of sophistication by cities of different sizes. Marilao in the Philippines and Balangoda in Sri Lanka are examples of secondary cities (populations of about 222,000 and 23,000, respectively) that have established programs to direct organic household waste streams toward urban farms (Cofie, Bradford, and Dreschel 2006; Cofie and Jackson 2013).

**Some cities have developed research and extension services tailored to the needs of farmers and businesses in urban and periurban settings.** Research programs on urban farming have been undertaken at both the municipal and higher levels. In China, the Ministry of Agriculture’s Center for Protected Agriculture and Environmental Engineering is supporting research on urban agriculture, including vertical and indoor farming, across some 40 research institutes (WWF 2012). Considerable R&D is going on to support advanced indoor agriculture systems in high- and upper-middle-income Asian cities. Parallel to these “plant factories”\(^7^0\) in areas confronted with resource scarcity, authorities can adopt incentives for resource recycling and conservation. And where municipal resources and planning capacities are inadequate to support centralized or state-of-the-art systems, hyperlocal and decentralized solutions can sometimes be developed. This is the spirit in which a ‘constructed wetland’ project was proposed to address the problematic use of contaminated river water to irrigate periurban farms in Hanoi (Nguyen 2016).
are hydroponic greenhouse systems, which are covered but rely on natural sunlight. In 2016, there were at least 518 plant factories and 500 hydroponic greenhouses in (East and Southeast) Asia, (Newbean Capital and Singapore Farming 2016). With regard to extension, Beijing’s Rural Economic Research Center supports the development of agricultural knowledge and skills—relating not only to farming approaches and technologies but also to relevant areas of business, finance, and marketing, while also helping to link producers to markets (Cai 2017). Seoul’s “agro-city” vision is backed by a comprehensive set of supportive interventions, ranging from technical to profile-raising ones. Measures include support for technical training and assistance, model farms, and vertical agriculture, as well as urban agriculture festivals, business fairs, and farmers’ markets.

One way in which municipal extension services or other programs can help farmers and agro-businesses is by developing their capacity to help themselves. They can do so by supporting collective action organizations such as farmers’ organizations and nonprofits that empower farmers to produce and market their products more efficiently or widely. Extension services can help by focusing not only on transmitting production-level skills and technologies but also by building social capital and the organizational capacity of farmers. Programs such as these are widely viewed as a needed departure from traditional extension services. In Shanghai, the number of periurban farmer cooperatives around Shanghai increased from 38 to 84 between 2008 and 2010, reportedly helping farmers achieve substantial increases in their incomes (in the order of 20 percent) (WWF 2012).

Municipalities can support urban farms indirectly by facilitating the development of local enterprises catering to the needs of local farms. Many services targeting urban and periurban farms, including more or less professional or commercially oriented ones, can indeed be offered by the private sector. In China, a business sector offering specialized equipment and advice to commercial indoor farms is reportedly experiencing rapid growth (based on presentation at IFC 2019). In India, firms are emerging to support various types of urban farms. Living Greens Organics, a Jaipur-based firm, offers indoor and outdoor urban farms with a full suite of products and services, from physical structures, equipment, and inputs, to analytics and technical assistance. Also based in Jaipur, the firm Hamari Krishi specializes in supplying equipment and advice to vertical hydroponic farms. In certain cities, small firms are experimenting with a variety of turnkey farming business models that allow city residents or organizations lacking in farming skills or space to take part in farming activities. In India, Delhi-based Edible Routes is an example of one such firm which has been providing end-to-end support to create and manage organic gardens for customers living in the region since 2010 (Kumar 2018).

Municipalities are also supporting food-related start-ups, both involving conventional and more advanced agricultural systems. Since the mid-2010s, Bandung, the capital city of West Java, Indonesia, has experienced a surge of interest in local food initiatives, including urban farming. In recent years, a wide variety of initiatives that have taken root in the city, from community gardening projects to farmers’ markets showcasing local products. Over 300 local initiatives were counted among the members of an online social media community known as the 1,000 Gardens Community, according to a 2017 study. Several cities in Vietnam, including Danang and Ho Chi Minh City, are actively courting and supporting “high-tech” urban agricultural initiatives through a combination of site clearance, concessional loans, and business acceleration services. Likewise, Singapore has a variety of programs to support the development of specialized agricultural technology firms to service urban agriculture (Liu 2017).

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71 Among East and Southeast Asian countries, Japan is the leader in this space with at least 200 indoor ‘plant factories’, according to its industry association. Other countries in Asia with a developing vertical farm industry include China, Taiwan, the Republic of Korea, and Singapore.

72 http://thelivinggreens.com/.

73 http://hamarikrishi.com/about-hamarikrishi/.

74 What makes this case noteworthy, besides the fact that Bandung is a small-to-medium-sized city by regional standards, is the degree to which food initiatives there have coalesced around structured networks, programs, and organizations, giving rise to a movement that seems to be not only shaping the city’s identity, but also spreading beyond the city. For example, one initiative known as Gardening Bandung, a grassroots network which grew out of a mayor-initiated forum, gained such momentum that it was renamed Gardening Indonesia to match its wide following. The network is credited with having seeded grassroots initiatives in other cities. Similarly, the effervescence around local food production and other initiatives has drawn the attention of multiple faculty members within one of the city’s major universities (ITB), positioning the city to become a model and learning center for others interested in local food production in other parts of the country.
SEIZING THE OPPORTUNITY FOR ACTION

This chapter provided an overview of approaches to food system intervention that are already being pursued in, or could be relevant to, urban Asia. For cities that are the region’s urban food policy pioneers, the benefits some of these approaches have to offer cities in terms of economic strength and resilience are already starting to manifest themselves. As for Asian cities that today are still closer to the “starting line” of urban food system engagement, as defined in Chapter 2, many will take advantage of what their regional peers are learning about food-smart approaches through their efforts and experimentation. But for all cities, the need to overcome the trials of COVID-19 will have offered them a unique chance to “build back better” by including urban food perspectives in city recovery planning and longer-term policy making.

Among other urban food system issues, the pandemic has brought particular focus to the vulnerability of many urban households to food insecurity, the sobering ramifications of diet-related chronic disease, the breadth of economic dependence on the informal food economy, the potential for upset in the last miles of food delivery, and the biosecurity hazards posed by fresh food markets. These and other challenges were not of cities’ choosing, but they present cities with a choice, and that is to regard the newly (re)discovered importance of food to city life as part of the scourge, or instead, its silver lining. After all, the crisis has also reasserted the food economy’s primacy in sustaining and nourishing urban residents, inspiring innovation, and in defining cityscapes, shaping city flows, and bringing them to life. And it has made clear how the most valuable and problematic parts of urban Asia’s food systems, as those on display in its street food culture and wet markets, are deeply intertwined. The next chapter spells out what Asian cities have to gain by making food a more central concern of urban policy and planning—and where they can either focus more attention or begin.
This chapter provides guidance on deepening and accelerating the urban food agenda in emerging Asia. It advocates for cities to identify, pursue, and measure progress toward higher food system aspirations, both commensurate with and linked to their broader economic and living standard objectives. It also advocates for cities to fully leverage their areas of comparative advantage to shape urban food systems, as the payoffs for doing so and the consequences of not doing so will be considerable. Building on the analysis already laid out, this chapter specifies a core set of action areas that will be relevant to the vast majority of cities in emerging Asia, in their journey to realize more ambitious food system aspirations. Toward this endeavor, the chapter also provides specific calls to action for different types of stakeholders, both governmental and nongovernmental.

The guidance provided in this chapter focuses on the “what” and the “who” of emerging Asia’s urban food agenda. It provides less coverage of the “how” since what is appropriate will vary sharply among cities depending on their size and administrative structures, local food system characteristics, the strength of their private sector and civil
society entities, and so forth. In other words, the appropriate arrangements for urban food system governance, the feasible set of specific policy options, and the feasible arrangements for program implementation will likely depend on local circumstances and national laws. The specific roadmaps for deepening urban food system engagement will have to be worked out locally and facilitated nationally.

ASIAN CITIES SHOULD SET THEIR FOOD SYSTEM ASPIRATIONS HIGHER

Food is central to most municipal leaders’ top priorities, yet most Asian cities have yet to formulate a cohesive let alone ambitious vision for their food system, or recognize food policy as being among their core functions. This state of affairs was confirmed by our survey of representative cities. The majority of respondents indicated that an obstacle to effective food policy engagement is a lack of priority given by the city government to these matters. For a majority of the reporting cities, food has not been traditionally addressed within the scope of city planning and this results in lost opportunities or additional costs related to physical and economic development planning. With the region’s ministries of agriculture, which have traditionally focused on primary agricultural production and rural development, urban food matters have often been “nobody’s business” administratively, or at least, nobody’s core business.

The majority of Asian cities lack explicit policy goals that relate to their food systems. When they do, those goals often mimic national ones (those relating to food security) and do not relate to the specific circumstances of individual cities. Otherwise, stated goals tend to focus simply on the avoidance or mitigation of disruptive shocks related to weather, food prices, food safety outbreaks, and so on. Goals of this nature can be useful for risk mitigation purposes yet say nothing about the opportunities available to cities through food system and dietary advancement. While there are examples of positive outliers, it is uncommon for Asian cities to articulate high aspirations for their food systems. It is even rarer for food-related goals to be commensurate with cities’ typically lofty aims in relation to job growth and innovation, livability, sustainability, safety, and resilience.

The paradox in this is that food is of critical import to many of the issues that large numbers of cities care most about or see as their top priorities. Those issues include but are not limited to fiscal and economic strength, job growth and innovation, greenness, safety, resilience, and livability. It needs to be better articulated and recognized that well-functioning food systems are critical for the identity of Asian cities as well as to their commercial, human, environmental, and fiscal health. Food systems are in fact a defining feature of Asia’s dynamic cities. That is why, among the lofty aspirations being set by Asian cities, one of them ought to be the realization of “RICH” food systems, or food systems that are:

- **Reliable (R)**—ensuring basic food security, provisioning an adequate and stable supply of food that is resilient to shocks. This characteristic relates to broader city goals of social stability, resilience, and disaster preparedness.
- **Inclusive (I)**—serving the least well-endowed residents of cities, freeing themselves of food access and nutritional health inequality, and making positive contributions to a dynamic and fair local economy. This characteristic relates to broader city goals of social stability, poverty reduction, and social justice.
- **Competitive (C)**—contributing to innovation, economic dynamism, and economic diversity, and attracting businesses and investors of various sizes and origins. This characteristic relates to broader city goals of economic vibrance and recovery, job creation, and fiscal health.
- **Healthy (H)**—realizing a safe and nutritionally sound diet while being environmentally benign and a net contributor to the health of the local economy. This characteristic relates to broader city goals of greenness, wellness, livability, and fiscal health.

Measurable indicators can be identified and tracked to monitor the performance of specific urban food systems over time and to benchmark a city’s status against that of national or regional peers. Assembling data on urban food system outcomes would by itself be a highly beneficial endeavor as better data will allow for more informed priority setting, program monitoring, and risk-based regulatory delivery. Table 5.1 provides
some illustrative performance indicators organized according to the RICH–food categories. This is by no means a comprehensive list or even one that is fully suitable across city sizes. Some of the indicators are not currently measurable in many cities. As part of future analytical work, efforts should be made to develop a refined set of performance indicators, guidelines for their measurement, and methods for gauging the links between these outcome areas and municipal policies and programs.75

Table 5.1: Illustrative Indicators for RICH Urban Food Systems

<table>
<thead>
<tr>
<th>Reliable</th>
<th>Share of households that experience moderate–severe food insecurity in the year</th>
<th>Share of households able to afford calorically and nutritionally adequate diets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Overall food price inflation rate</td>
<td>Measure of price volatility for staple foods</td>
</tr>
<tr>
<td></td>
<td>Consumer food safety confidence index</td>
<td>Annual rate of periurban cropland loss</td>
</tr>
<tr>
<td></td>
<td>Share of food supply from local farms and gardens</td>
<td>Area of (peri)urban cropland severely affected by pests or weather events</td>
</tr>
<tr>
<td></td>
<td>Rate of death or culling of farmed animals, including fish, due to disease</td>
<td></td>
</tr>
<tr>
<td>Inclusive</td>
<td>Share of (poor) households able to afford calorically and nutritionally adequate diets</td>
<td>Share of (poor) households' expenditures on food</td>
</tr>
<tr>
<td></td>
<td>Share of (poor) households within walking distance of a fresh produce market</td>
<td>Price premiums of retail food faced by poor households and in informal settlements</td>
</tr>
<tr>
<td></td>
<td>Dietary diversity index for the poor and near-poor</td>
<td>Number of accredited vendors under public food procurement programs</td>
</tr>
<tr>
<td></td>
<td>Number of registered members of street food vendors' associations</td>
<td>Number of upgraded city-monitored community food markets</td>
</tr>
<tr>
<td></td>
<td>Number of students or meals served in municipal schools</td>
<td></td>
</tr>
<tr>
<td>Competitive</td>
<td>Ratio of consumer-to-farmgate prices for a basket of foods</td>
<td>Measure of harvested food lost or wasted</td>
</tr>
<tr>
<td></td>
<td>Measures of diversity and spatial spread of food retailers</td>
<td>Growth rate of employment in modern food retail outlets</td>
</tr>
<tr>
<td></td>
<td>Sales revenue growth of small and medium food manufacturing and food service enterprises</td>
<td>Sales revenue growth of large food manufacturing companies</td>
</tr>
<tr>
<td></td>
<td>Tourist Food Satisfaction Index</td>
<td>Value of public and private investment in food market infrastructure relative to GDP</td>
</tr>
<tr>
<td></td>
<td>Foreign direct investment in food manufacturing, food distribution, and restaurants</td>
<td></td>
</tr>
<tr>
<td>Healthy</td>
<td>Prevalence of malnutrition in all its forms</td>
<td>Prevalence of diet-related noncommunicable disease</td>
</tr>
<tr>
<td></td>
<td>Share of deaths and DALYs attributable to dietary risk factors</td>
<td>Per capita sales of nonessential ultraprocessed foods</td>
</tr>
<tr>
<td></td>
<td>Deaths and DALYs attributed to unsafe food</td>
<td>Percentage of the population with access to clean and efficient cooking</td>
</tr>
<tr>
<td></td>
<td>GHG emissions related to food consumption</td>
<td>Food as share of municipal landfill waste</td>
</tr>
<tr>
<td></td>
<td>Food as share of municipal landfill waste</td>
<td>Share of food loss and waste composted or diverted to the bioeconomy</td>
</tr>
<tr>
<td></td>
<td>Share of irrigated (peri)urban cropland using untreated urban wastewater</td>
<td></td>
</tr>
</tbody>
</table>

75 See also the World Bank/FAO/RUAF (2017) publication on urban food metrics. Many of the metrics proposed there relate to institutional or food system structural dimensions although some pertain to food system outcomes.
ASIAN CITIES HAVE COMPARATIVE ADVANTAGES TO ACT ON IMPORTANT FOOD SYSTEM MATTERS

The distinctive problems and opportunities associated with urban food systems require a higher degree and more effective engagement of municipalities in food policy and food-related programming. The many reasons for this were highlighted in previous chapters. For example, some of the most severe forms of malnutrition are now cities’ problems in parts of Asia. Some of the region’s most fertile cropland—periurban land—faces the dual threat of resource competition under a changing climate. Urban form may be among the leading yet overlooked drivers of dietary change, the trajectory of which may entail huge future public health costs. High density Asian cities have sometimes become cross-contamination hubs for zoonoses and unsafe food. With this growing burden, Asian cities can hardly be passive or reactive players on food matters.

With unique strengths and multiple points of leverage to take on food system challenges and opportunities, Asian cities actually have considerable room to maneuver. Results from the regional survey point to a wide range of areas in which cities have at least partial mandates to act on food matters, even though some cities, especially smaller ones, are constrained to act due to limited financial resources and human and institutional capacity. These constraints can be overcome. With their smaller but stronger sphere of control than higher levels of government, cities are in a position to influence the direction of food systems. Many Asian cities have comparatively strong leverage points to take on food-related challenges and opportunities. For example:

- Cities may enjoy greater flexibility than higher levels of government, and this should help them establish appropriately holistic approaches to food system governance. Cities—especially ones of moderate size—may be more apt than larger and more complex administrative structures to establish the kinds of cross-cutting and collaborative governance initiatives called for by the complex nature of food system challenges and opportunities.

- Some cities have it in their power to protect periurban agricultural land, which is often a major source of food, especially of high-nutrient perishable foods, if not also for staple grains. Urban and periurban agriculture may have a key role to play in preventing cities from becoming fresh food deserts. Its role may be particularly pronounced in geographies where logistics and cooling systems are underdeveloped and the movement of food is both costly and risky. To the extent that they feature food production activities, urban food systems are also ripe grounds for experimentation with the principles of circular or closed-loop economies.

- Cities generally enjoy more proximity to consumers and communities than higher-level authorities. In fact, in the traditional food system paradigm, cities are the consumer—the end-user of products that flow in one direction from rural to urban spaces. While many consumption variables are outside of cities’ control—including multiple determinants of food prices—cities have other means to influence consumer choices, including through welfare and public education programs and institutional food services and, more indirectly, through their influence over commercial food landscapes and local food production.

Of course, the comparative advantage of cities does not extend to all dimensions of food systems or to the full range of potential policy instruments. For example, in the quest to promote the access of urban residents to a broad range of affordable, nutritious foods, cities tend to play no role in such areas as promoting staple food fortification or facilitating food imports, and only a limited role in reorienting safety net programs toward the provision of high-nutrient foods or intervening to reduce on-farm food losses. National-level institutions or programs tend to lead in these areas, and many others. The comparative advantage of cities is much stronger in relation to matters of land use, infrastructure development, and institutional procurement.

Over time, cities’ full utilization of their comparative advantage will depend on there being effective institutional arrangements for urban food system governance. Effective examples of this were noted in Chapter 4, and this topic is discussed more extensively in World Bank (2020). However, it would be remiss to
claim that complex formal structures for urban food system governance are a prerequisite for any effective urban food policy or programs. In most best practice examples highlighted in the literature, the institutional arrangements for urban food system governance evolved over time, often as outgrowths of specific food-related interventions or time-bound planning processes. In these instances, action led to a vision, which in turn led to institutionalization, in this order, not its reverse. This is something especially important to consider in circumstances involving smaller cities—or those with very limited administrative capacity—and cities still at the reactive stage of food system engagement, for which there has been limited piloting of alternative modes of engagement.

There is no “one size fits all.” The appropriate degree and forms of urban food system governance will vary with local circumstances. This fact, however, does not mean that cities should be passive about food system governance. As cities embark on and continue their food policy journey, they should explore and pilot alternative institutional arrangements to better meet near- and longer-term needs. Over time, many cities will find it advantageous to appoint a lead food agency—whether that agency is new or already exists—and developing a networked governance structure that involves multiple parts of city government and permanent community participation. Also beneficial for most cities will be processes to (a) develop one or several food strategies, (b) integrate food system considerations into municipal economic development and disaster and resilience planning, (c) collect data aligned with food system indicators, and (d) join a multicity food initiative that can facilitate learning and resource sharing.

LEVERAGING CITIES’ AREAS OF COMPARATIVE ADVANTAGE

Chapter 3 summarized the results of a survey of cities from across the region. It highlighted a diversity of patterns with respect to the breadth, depth, and inclusiveness of city policies and programs in the food space and the degree to which food matters have been mainstreamed into overall city planning. While there appears to be a growing array of initiatives across cities of many different sizes, many cities still appear to be at a relatively early stage of engaging with food policy or institutionalizing such efforts. Indeed, nearly three-fourths of the sample, and an even larger proportion of smaller cities, were categorized by the survey as being either reactive or moderately engaged on food matters. A majority of the region’s capital cities are also at early stages of food policy engagement. Hence, a lot more needs to be done—and done better—if cities are going to be effective in mitigating several large and emerging food-related risks, let alone realize more ambitious aims for their food systems.

The menu of potential urban food policy instruments is long. Chapter 4 provided many illustrations of areas where Asian cities can do more in the food space, either in relation to consumer choices and behavior, food marketing and logistics, or primary agricultural production. It also cited a variety of examples of such efforts, both from within the region and globally. As noted there, ‘doing more’ can take multiple forms, including advocacy campaigns, regulation, investment, or facilitation of investments and services provided by the private sector, NGOs, or others. The appropriateness of these different forms of action depend on local circumstances, including the structure and complexity of the local food market, city demographics, and the availability of financial, human, and institutional resources. Some efforts can target specific population groups or geographic areas, while others might seek to influence investments, behavior, and outcomes on a city-wide basis.

Table 5.2 identifies a dozen action areas that are likely to prove important as many Asian cities intensify their focus on food policy and programming. For each of these areas of action, the table specifies which of the RICH food system attributes they would likely help develop, and how substantially. Asterisks indicate whether they do so very substantially (**), moderately (*), or minimally (*). As cities address options to “build back better” and restore their economies following the extensive impacts of the COVID-19 pandemic, many of these options will be relevant in strengthening the foundations for RICH food systems. As illustrated in the table and below, most of these interventions can and will serve multiple purposes, contributing to more than one higher-level food system goal.
For many cities, better protecting prime urban and periurban cropland will contribute much to both the reliability of their food systems and to the better availability and affordability of some nutritious foods. For some cities, it may be too late to do much on this front if a very large proportion of this land has already been converted to residential, industrial, commercial, or other uses—or been severely degraded. Those cities might only be able to now protect small pockets of land to support experimental or educational farming, more than meaningfully contributions to the cities’ food supply. But other cities still have a more extensive agricultural hinterland in periurban areas and beyond. This land may be under immediate threat, requiring relatively quick protective action. Or, the challenges may be longer-term and require a forward-looking strategy and policy. The latter situation is likely to hold in many smaller cities located in favorable agroecological areas.

Providing public infrastructure and ensuring the availability of various technical and financial services may prove crucial for the further development of periurban agriculture as a reliable and competitive source of staple and especially high-nutrient foods. This may require steps by government agencies to improve farm community access to bulk irrigation water and electricity, and to address environmental hazards like contaminated soil and water that may harm agricultural productivity or food safety. The need for public intervention in the provision of farm advisory and financial services would depend on local circumstances. The potential significance of these interventions may vary according to the size of cities’ agricultural hinterland and their agroecological conditions.

Several interventions identified in Table 5.2 aim to foster innovation in the food system, whether through food business incubation and training programs, the development of modern horticultural parks, or other means. Success in these endeavors can contribute to more competitive and healthier urban food systems. These are interventions likely to be most suitable for cities that house major universities or research centers, and those with favorable growing conditions for horticultural products. Some form of agrofood incubation support could be provided in many food-engaged cities, although the scale and sophistication of these efforts should match local resources.

Improving the infrastructure and management of fresh produce markets will likely be vital for many Asian cities to ensure inclusive access to high-nutrient foods and to address legacy environmental and food safety risks. Doing so may require considerable public investment, although institutional options for the management of such markets are varied. Demographic changes, the pace and extent of supermarket penetration, and various urban planning considerations (including intended changes in transportation routes, logistics, and relevant regulations) should be among the many factors considered in more strategic assessments of cities’ food retail market infrastructure and the planning of upgrades or other changes.

As noted earlier, many Asian cities have become biosecurity and food safety hotspots as a result of dietary patterns, the poor hygienic practices of food operators and handlers, environmental health hazards, and other factors. Effective interventions, from farm to fork, will contribute considerably to healthier and more competitive urban food systems. Urban food safety is a matter of shared responsibility and calls for measures to be taken by public agencies, farmers, food companies, and consumers, all supported by scientific and educational institutions. Food safety is sometimes an entry point for cities into deeper food system engagement, even though food safety issues often come to be addressed in reaction to an outbreak. Some cities approach food safety simply as a matter of regulatory enforcement, but others gradually turn their attention to food safety science and surveillance, the adoption of preventive measures by farmers and food enterprises, and food system stakeholders’ capacity and awareness.
### Table 5.2: A Dozen Promising Areas for Increased Food-Related Engagement by Cities in Emerging Asia

<table>
<thead>
<tr>
<th>Area</th>
<th>Reliable</th>
<th>Inclusive</th>
<th>Competitive</th>
<th>Healthy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protect prime urban and periurban cropland, potentially through planning and zoning measures, land-use restrictions and prescriptions, land market measures, programs to increase the local residents’ appreciation of local farmland, or other means.</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Make space for urban farming in its multiple forms. This could be on public land, rooftops, near public institutions, and in underutilized public spaces.</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Provide infrastructure and services to support sustainable agricultural activities. Anticipate environmental hazards, and enable access to technical and financial services.</td>
<td>***</td>
<td>*</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>Invest and partner in modern horticultural parks to support residents’ access to fresh produce, create jobs, and manage urban waste streams.</td>
<td>*</td>
<td>*</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>Invest and partner in agrofood incubation and training programs to support innovation in sustainable agriculture, nutritious food business development, and youth entrepreneurship.</td>
<td>*</td>
<td>*</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>Invest in market system strategic planning and partner with private sector in locating and developing modern (gateway) wholesale markets with multiple services such as cold storage, logistics, and market information.</td>
<td>*</td>
<td>*</td>
<td>***</td>
<td>*</td>
</tr>
<tr>
<td>Upgrade and develop the infrastructure and management of community-level fresh produce markets to ensure broad access to healthy foods and address environmental and food safety risks.</td>
<td>*</td>
<td>***</td>
<td>***</td>
<td></td>
</tr>
<tr>
<td>Leverage public food procurement for public or regulated institutions such as government agencies, hospitals, schools, and corrections facilities to support the provision and consumption of healthy and sustainable foods (that is, diverse, minimally processed, and primarily plant-based or low-food chain items).</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>**</td>
</tr>
<tr>
<td>Facilitate multistakeholder programs and interventions to improve nutrition and dietary diversity especially among women, infants, and children in poor households and informal settlements.</td>
<td>***</td>
<td>***</td>
<td></td>
<td>***</td>
</tr>
<tr>
<td>Increase awareness of nutritional health among members of the public as well as food system and public health professionals through public education, professional licensing, and campaigns.</td>
<td>***</td>
<td></td>
<td></td>
<td>***</td>
</tr>
<tr>
<td>Develop programs to induce upgrades in farming, food handling, and food preparation practices to reduce food safety and other biosecurity risks from farm to fork. Undertake interventions such as enhanced food safety hazard surveillance and food facility inspections using risk-based approaches.</td>
<td>*</td>
<td>***</td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td>Facilitate neighborhood or city-wide food loss and waste partnerships and initiatives, including ones supporting preventive measures, secondary food use, composting, and the bioeconomy.</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

**Note:** Contribution to RICH objective: Substantial (“***”); Moderate (“**”); or Minimal (“*”).
CALLS TO ACTION FOR DIFFERENT STAKEHOLDERS

Asian cities have considerable room for maneuver to affect the trajectory of their food systems but this does not mean that they can or should act alone in this endeavor. In some areas, cities will need to be better guided or empowered to act on food matters by national and state institutions. To design and implement successful plans and programs, some Asian cities may require technical and financial assistance, and most would benefit from peer-to-peer experience sharing. Indeed, many stakeholders within and beyond Asia’s cities have potentially very important roles and responsibilities in advancing the urban food agenda in emerging Asia.

National government entities have important roles to play in support of proactive and well-designed food system interventions at the city level. Many city-level actions in the food space will need to be enabled and guided by national laws, regulations, standards, and plans. Individual cities can be creative in how they apply these to best fit local circumstances, but individual cities cannot always be left to act on their own as their food and agriculture systems are still part of a national whole. National rules, regulations, or administrative procedures that are outdated or lack clarity may inhibit effective city-level action in some cases, for example, affecting whether urban farming can be promoted in city spaces. National-level data collection may be critical for cities to make informed decisions relating to the food system. National data on the loss of periurban cropland and its contributions to food supply and good nutrition, for example, would help both cities and higher-level authorities intervene appropriately and coherently. Some city-level interventions may not be possible without financial support from higher levels of government. Financial resources, either from national programs or provided on a competitive basis, may be needed to enhance city-level action. National government agencies can also play important roles where initiatives extend across multiple jurisdictions, for example, involving multiple municipal and rural authorities in multiple surrounding provinces or agricultural clusters around a big city.

Multicity or translocal networks can also play a vital role in raising the profile of urban food problems and opportunities by increasing awareness of them among city leaders and fostering experience and resource sharing. Multicity networks include those already dedicated to food matters (such as the network of Milan Urban Food Policy Pact cities), those aiming to promote the application of “smart city” principles (such as the ASEAN Smart City network), and those more generally supporting sustainable urban development (such as ICLEI and the C40 Cities network). Those mentioned here are international and regional networks, yet it will also be beneficial to utilize national networks of cities or municipal leaders to strengthen awareness and experience sharing on food-related problems, opportunities, and interventions.

It will take broad mobilization by a diverse set of actors to meaningfully pursue the RICH food agenda, and so, examples of actions that specific groups of stakeholders can take to engage more proactively in urban food-related matters are offered below. These calls to action are offered for city leaders and policy makers, urban planning professionals, national ministries (such as ministries of agriculture, health, commerce, and environment), large food companies and food industry associations, civil society organizations, academic institutions (research and education), and international development partners.
Urban planning professionals

- Develop a vision of how food culture, food production, and food-related business can better contribute to the near- and long-term competitiveness and economic development goals of the city and how food-related commerce and hazards or costs will impact the city’s fiscal health, under different scenarios.
- Integrate considerations of food availability, affordability, and quality into assessments of horizontal and vertical urban expansion, paying particular attention to the need and scope for protecting periurban agricultural land. Quantify, at the local level, future competition among agricultural, residential, industrial, and other uses of land, water, and resources, and specify the associated policy options and tradeoffs for municipal and national decision makers.
- Explore alternative options to create space for urban agriculture, whether through the zoning of municipal public land, the designation of land for community gardens, or the availing of rooftops and other structures for agricultural production. Outline program and policy options for realizing this potential.
- Develop short- and longer-term strategic plans pertaining to the maintenance, upgrading, or conversion of community or traditional food markets, taking into account demographics, food shopping trends, current and future transportation requirements, and other factors. Position this assessment so that decisions can be made on a city-wide basis rather than for each traditional market, one by one.
- Integrate considerations of food waste, food packaging, and food-related effluents and pollution into municipal strategies for waste reduction or management and environmental management.
- Integrate considerations of food availability, affordability, quality, and culture into city-region plans to promote domestic and international tourism, where such potential exists.

Asian city leaders and policy makers

- Develop clear messaging and regularly communicate to constituents how food, food commerce, and dietary matters relate to the broader goals, problems and opportunities facing the city (and its hinterland)—with emphasis on factors affecting resilience, inclusiveness, competitiveness, and (human, environmental, and fiscal) health.
- Lead or empower others to lead a process of dialogue among key stakeholder groups to define priority areas for short- and medium-term city investment, facilitation, and advocacy, to foster healthier and more sustainable urban food systems.
- Advocate among national leaders and technical agencies to reform national laws and regulations and strengthen specific national guidelines to better enable or facilitate actions at the city-region level.
- Develop or strengthen the institutional arrangements for improved coherence of food-related policies and for improved coordination of food-related initiatives in the city-region. This may involve a combination of temporary committees and more permanent structures.
- Allocate sufficient resources for public investments and institutional operating costs to effectively pursue food system opportunities and manage the food system risks deemed to be most significant for the city-region. Monitor the (cost-) effectiveness of these expenditures and make adjustments as needed.
- Use public investments and programs to leverage private investment and incentivize other activities that will strengthen food system capacities and improve food-related outcomes.
- Participate in multicity global, regional, and national networks that provide learning and experience sharing opportunities relating to urban food policy and good practices.
National technical ministries—notably of agriculture, health, commerce, and environment

- Update regulatory frameworks in relation to agricultural land protection and tenure, land-use zoning, the commercialization and use of agricultural chemicals and veterinary drugs, and other rights and responsibilities pertaining to primary agricultural production.
- Quantify, at the national or subnational level, future competition among agricultural, residential, industrial, and other uses of urban and periurban land, water, and resources, and specify the associated policy options and tradeoffs for municipal and national decision makers.
- Update regulatory frameworks relating to freight, logistical services, and e-commerce, to reflect the specific needs and challenges of food distribution and logistics.
- Provide technical guidance for cities to apply risk-based approaches to the management of food safety, animal health, and environmental protection, and specifically to surveillance, assessment, regulatory enforcement, and risk communication.
- Make adaptations to sectoral censuses (farm, enterprise, and labor ones) and other national-level data gathering instruments to generate more and better information about urban food system realities.
- Develop national plans for public agricultural and food market infrastructure development (including wholesale markets) to enable city- or province-level initiatives to be assessed and financed as part of a cohesive national system of marketplaces (hierarchical or networked).

Large food companies and food industry associations

- Participate in processes to assess and prioritize city-regional food system challenges and opportunities, and chart out longer-term goals and roadmaps for realizing them with an emphasis on improving the enabling environments in which food-related businesses operate.
- Play active roles in city-regional crisis response committees and for a convened to address biosecurity problems, food safety outbreaks, adverse weather events, or other shocks to the local food system, whenever these occur.
- Plan and participate in public-private initiatives to address urban food insecurity and promote affordable access to healthy foods, especially among poor and vulnerable groups.
- Organize joint action to strengthen food operator awareness of food safety risks, facilitate the adoption of good agricultural, manufacturing, and food handling practices, and support programs to improve food and pathogen traceability and transparency.
- Work with municipal units to develop a system of regulations, incentives, industry codes of practice, and support programs to reduce urban food waste and contribute to the local bioeconomy.
- Initiate and implement programs to improve the nutritional profile of processed foods and beverages through product reformulation, new product development, or other means. Collaborate with city and national government entities on programs to improve the nutritional profile of foods consumed in school, enterprise, and other institutional canteens.
- Partner with municipal authorities and stakeholders to develop agrofood innovation hubs, horticultural parks, and other venues to test and apply emerging technologies and address emerging risks. In larger cities and regional hubs, collaborate with local universities or others to create agrofood incubators or accelerators for businesses and social enterprises.
### Civil society organizations

- Participate in processes to assess and prioritize city-regional food system challenges and opportunities, and chart out longer-term goals and roadmaps for realizing them with an emphasis on consumer and environmental protection, and the interests of poor and vulnerable stakeholders in the urban food system.
- Advocate for the rights of urban and periurban farmers and farmland protection, providing legal support when necessary.
- Advocate for the protection of urban consumers, including school children, from food-related fraud or misrepresentation, food safety mismanagement, food crisis profiteering, and more, providing legal support when needed.
- Advocate for the rights and safe working conditions of food microenterprises and market and street food vendors, and facilitate programs to improve the working conditions and operating practices of such entities.
- Assist municipal and national authorities and stakeholders to implement targeted programs that address food insecurity, low quality diets, and unsafe food in low-income neighborhoods and informal settlements within cities.

### International development partners

- Facilitate city-level multistakeholder dialogues leading to priority-setting, strategic plans, and investment or program planning pertaining to food systems.
- Help strengthen the empirical basis for food-related decision making by cities by commissioning or cost-sharing consumer and other stakeholder surveys, food and nutritional security analyses, environmental and food safety risk assessments, and other diagnostic work.
- Support multicity networks and other modes of knowledge management for the sharing of experiences and lessons on “what works” and “what doesn’t” in terms of cost interventions.
- Assist individual cities to (i) integrate food system matters into their broader approaches and institutions for municipal governance, (ii) undertake feasibility studies and eventually finance public investments supporting (peri)urban food production and market infrastructure, and (iii) implement other programs requiring regulatory capacity building or stakeholder behavior changes from farm to urban fork.

### Academic organizations (research and education)

- Undertake and disseminate research addressing knowledge gaps and emerging trends relating to the structure and performance of food systems, consumer perceptions and behavior, food and nutritional security, food system risks and other matters relating to Asia’s urban food systems.
- Undertake evaluation and impact assessments on urban food policies and programs and recommend measures to improve targeting, cost-effectiveness, and equitable outcomes.
- Train the next generation of agrofood entrepreneurs and managers/technicians in sustainable food production and distribution systems.
- Assist national and municipal governments in designing advocacy programs and other communications to bring about behavior changes among farmers, consumers, food vendors, and others.
Address knowledge gaps to help deepen action and improve results

This study found that urban planners and policy makers in the region face significant information gaps pertaining to the structure and performance of urban food systems. On many food system topics, up-to-date and representative data are not available or not adequately disaggregated between rural and urban areas. Even when aggregate level urban data are available, they generally cannot be used to distinguish patterns or trends in smaller versus larger cities. While commercial surveys provide a reasonably good picture of dynamics within the modern retail and processed food subsectors in some of Asia’s leading cities, this information is less available for secondary and smaller cities. Accurate data pertaining to the (often very large) informal urban food system are also almost nonexistent. Another issue for evidence gathering is the rapid growth of many Asian cities and the relatively quick pace of change taking place in dietary patterns and market structures. Given the pace of change, available survey data from five to ten years ago may not provide the most accurate picture of current consumption or food business trends.

The practitioner community is also at an early stage of data collection and analysis relating to the institutional arrangements shaping urban food system governance in Asia and the portfolios of policies and programs being deployed by cities. The limited survey work carried out for this study is, to the best of our knowledge, the first attempt to gain a systematic picture of the status of urban food policy within the Asia region. Most prior work consists of individual case studies documenting positive experiences and best practices. More detailed analysis of our survey results will be possible, but data on food system outcomes were not systematically collected in the surveyed cities. Hence, relationships between action (or inaction) and results cannot be analyzed at this time. At a regional level and for cities of different sizes and characteristics, we are not yet able to draw definitive conclusions about what works, and what does not. However, the possibility of diving into individual cities or groups of cities to explore the trends and principles that are emerging from this work should be explored.

The mainstreaming of food matters into urban planning and policy across large parts of emerging Asia will likely require five to ten years of effort given the current state of play and knowledge, and given the complexity of the issues at hand. Achieving widespread success in this effort of mainstreaming and realizing RICH food system aspirations will require a much stronger empirical base than the one available at the time of writing. Closing important knowledge gaps will require collaborative and multi-institutional programs of applied research and experience sharing. The research would need to employ survey and other methods to enable a better understanding of topics such as urban and periurban land-use change dynamics, dietary habits, preferences and risk factors, the nature and remuneration of food sector jobs including informal ones, the food environments of slums and other underserviced locations, the environmental footprints of urban food systems, the changing forms and efficiencies of urban food logistics, the fiscal impacts of urban food systems, and others. In addition, it would be beneficial to systematically review the implementation and efficacy of a representative range of urban food programs in the region to draw out key lessons and guidance. Building and sharing this enhanced knowledge base—perhaps through existing or newly emerging regional networks—will yield a very high return given what is at stake for Asia’s cities and their residents, and the amount of public and private investment that will be undertaken to better service the region’s urban populations in the coming decade and beyond.
REFERENCES


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Food and food system performance are critical to the human and environmental health, competitiveness, and resilience of all cities. In Asian cities, food ought to have the full attention of urban leaders as food system challenges and opportunities become more complex. RICH Food, Smart City offers us a first food system-themed survey of Asian cities and shows that, in much of the region, a food system perspective is still in early stages of being integrated into urban policy and planning while an urban perspective is largely lacking from national food policy.

RICH Food, Smart City identifies the contours of an Asian urban food policy agenda and provides practical guidance on how Asia's urban leaders can set and pursue food system goals more commensurate with their aspirations to build strong, resilient cities.