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STATE-LED LOCALIZATION OF FOOD PROVISIONING AND FOOD SECURITY IN URBAN CHINA

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Abstract

Food localization has been extensively studied and advocated in Western countries, focusing on its oppositional stance to food system globalization, long food supply chains and agribusiness, the disconnect between producers and consumers, and a desire to reconnect urban consumers with small farmers in the hinterland of cities. More recently, these localization models have been taken up by international agencies and others and "exported" to the Global South. Rapid urbanization in the Global South has led to a major and growing crisis of food insecurity, which these models and approaches are ill-equipped to address. Hence, it is important to examine other potential models of localization that have achieved success in improving food security and which were developed under similar conditions of rapid urbanization. As a contribution to this re-examination, this paper focuses on state-led efforts of food provisioning localization across mainland China that have been underway since the late 1980s. Little scholarly attention has been paid to this state-led food provisioning localization effort and how it achieves and reinforces urban food security. State-led food provisioning localization has contributed to a high level of food availability, food affordability and physical access to food, as the case study of Nanjing clearly shows. This study shows that localization in China involves the whole food supply chain and establishing territorialized responsibilities for food security. The main function of such food provisioning localization is to be inclusive of and balance decision-making powers linked to food supply between local and non-local as well as public and private sector actors. This case offers important lessons for other countries undergoing rapid urbanization and dealing with growing urban food insecurity.

Keywords

food localization, food supply chain, food governance, food system resilience, food security

Suggested Citation

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This is the 51st discussion paper in a series published by the Hungry Cities Partnership (HCP), an international research project examining food security and inclusive growth in cities in the Global South. The multi-year collaborative project aims to understand how cities in the Global South will manage the food security challenges arising from rapid urbanization and the transformation of urban food systems. The Partnership is funded by the Social Sciences and Humanities Research Council of Canada (SSHRC) and the International Development Research Centre (IDRC) through the International Partnerships for Sustainable Societies (IPaSS) Program. Funding was also received from the Food Urbanization, Environment and Livelihoods (FUEL) Project of the African Food Security Urban Network (AFSUN) funded by the SSHRC.

Introduction

China's recent history of rapid urbanization has been accompanied by a major geographical expansion of food supply chains to feed the country's large urban population (Wang 2019). The average large city in China now has complex supply chains that deliver food from many parts of the country, from other countries in the region, and from global markets (Stringer et al 2009, Waldron et al 2010). Long-distance food supply chains are not a uniquely Chinese phenomenon since many global cities are increasingly dependent on value chains that originate in geographically distant agricultural production and processing sites (Tacoli 2020, Tefft and Jonasova 2020). This global trend has been brought into sharp relief by COVID-19 and fears that the severe disruption of global, regional and national supply chains would lead to a marked upsurge in urban food insecurity (Clapp and Moseley 2020, Reardon et al 2020). Although these supply chains have proved more resilient than initially feared (Hobbs 2021, Marusak et al 2021), COVID-19 has renewed debate about the advisability of dependence on lengthy supply chains and the need for more localized food production and shorter chains. While the pandemic has brought new urgency to the debate, arguments about the desirability of "localization" of food production have a longer pedigree, particularly in North America and Europe.

A major argument in favour of food localization is that it embodies "resistance" to globalization, the commodification and corporatization of food supply chains, industrialized agriculture and the domination of supermarket chains, and the resulting sense of the "placelessness" of food (Kirwan and Maye 2013, Weiss et al 2020). Food delocalization is said to be the result of the dominance of corporate capital under conditions of neo-liberalization (Clapp 2015, Weiss et al 2020). Because food delocalization has had notable negative impacts on food quality, advocacy of food localization has intensified (Baldy and Kruse 2019, Wilhelmina et al 2010). Localization is viewed as a viable and desirable alternative to the globalized, industrialized and corporatized food system (Baritaux et al 2016, Bowen and Mutersbaugh 2014). Localization as "resistance" is often coupled with cultural arguments on the desirability of "relinking" place and product, privileging the connection between food products and specific places, and associating food product quality with particular localities (Baritaux et al 2016, Bowen and Mutersbaugh 2014, Tregear 2011). Relinking also implies the spatial and social reconnection of producer and consumer through shorter food supply chains and direct marketing by producers (Baritaux et al 2016, Sonnino 2010).

Much of the original impetus for food localization came from alternative food networks (AFNs) whose objective has been to reduce the (physical) distance between production and consumption. Jarosz (2008) identified four key AFN aspirations: (a) shorter distance between producers and consumers, (b) alternate food venues such as cooperatives, farmers' markets and community gardens, (c) small farm size and organic farming methods; and (d) commitment to sustainable food production and consumption. Food localization is also regarded by AFNs as a way to address the monopoly of supermarkets and big box stores over the food supply by supporting small-scale growers (Harris 2009, Haysom, 2018, James 2016). Some refer to this as "defensive localization" because it constructs the "local" as a defence against the depredations of non-local global and national food networks (Hinrichs 2003, Kirwan and Maye 2013).

Advocates of localization suggest the process has at least four desirable outcomes. First, localization leads to a more sustainable urban food system (Baritaux et al 2016, James 2016), although some have argued that localization in and of itself is not inevitably more sustainable than other scales of food supply (Kirwan and Maye 2013, Sonnino 2013). Second, localization elevates the quality of food produced and consumed because it increases the level of trust and proximity between producer and consumer (Coq-Huelva et al, 2014). In addition, localization means greater access to quality produce —such as *terroir* or artisanal products—specific to the local area (Baritaux et al. 2016). Third, localization is a development tool to promote highly desirable community economies and agriculture (Madaleno et al,

2019, O'Neill 2014). Finally, food localization can mitigate urban food insecurity by increasing access to food by making it more affordable (Kirwan and Maye 2013).

While AFN advocacy of localization envisages a strictly limited role for government, the idea of localization has recently been taken up by governments and international agencies such as the FAO and UN Habitat (Sonnino and Coulson, 2020). The 2017 New Urban Agenda (NUA) of Habitat III, for example, commits signatory governments to support "local provision of goods and services and leveraging the proximity of resources, recognizing that heavy reliance on distant sources of energy, water, food and materials can pose sustainability challenges, including vulnerability to service supply disruptions, and that local provision can facilitate inhabitants' access to resources" (UN Habitat, 2017). Battersby and Watson (2020) note that food is frequently linked in the NUA to "local issues of environmental sustainability, resilience, agriculture, rural-urban linkages, small-scale farmers, and urban green space." The FAO's parallel City Region Food System (CRFS) approach is similarly premised, and by definition, on the primacy of the local (Blay-Palmer et al 2018). Watson (2021: 24) argues that the CFRS approach is embedded in the NUA and is "yet another example of a Global North-inspired planning idea." Furthermore, and of considerable relevance to a study of localization in China, "the nature of towns and cities, and institutions of governance vary significantly across the globe and may be very different from the prevailing situation in Europe and the United States" (Watson, 2021: 24). The Milan Urban Food Policy Pact (MUFPP), a growing coalition of over 200 city governments worldwide, has a similar emphasis on localization through measures such as (a) promoting and strengthening urban and peri-urban food production, integrating urban and peri-urban agriculture into city resilience plans; (b) focusing on smallholder producers and family farmers, securing access and tenure to land for sustainable food production in urban and peri-urban areas; (c) providing access to municipal land for local agricultural production; (d) providing services to food producers in and around cities; and (e) supporting short food chains, producer organizations, producer-to-consumer networks and platforms, and other market systems "that integrate the social and economic infrastructure of urban food system that links urban and rural areas" (MUFPP 2015).

This discussion paper aims to make three basic contributions to the literature on food system localization. First, while existing studies have highlighted the relevance of food localization for food quality and environmental sustainability, this paper suggests that its relationship with urban food security has been neglected. Second, existing studies have largely neglected the localization of food distribution, including the localization of wholesaling and retailing, a central focus of this paper. Third, the role of government in food localization has received only limited attention in the academic literature to date. Using Nanjing as a case study, this paper addresses the role of state-led localization of food provisioning including its evolution, character, drivers and links to urban food security.

Food Provisioning Localization in China

Characteristics of Localization

At its most basic, food localization in Europe and North America means "increasing local food production for local consumption" (Sonnino 2010), and relinking local production with local consumption (Baritaux et al 2016). AFNs overtly oppose "the industrialization of the global food system and the cooptation of food chains by increasingly powerful retailers and vertically integrated, transnational agrifood companies" (Bowen and Mutersbaugh 2014: 202). By contrast, China's system of state-led food provisioning localization is not based on principles of "resistance" to globalization or "relinking" producers and consumers. Nor does it oppose food globalization and industrial farming, or replicate the localized small farm agricultural production bias that characterizes AFNs, the NUA, the CRFS approach and the MUFPP.

While there are some superficial similarities, no western model of localization adequately captures the concept, motivation and practice of localization in China. It has long been an article of faith among US planners that food supply is best run by businesses and markets rather than driven by the public sector (Clancy 2004). This thinking has certainly been questioned by some (Buchan et al 2019), while others have advocated triangular collaboration between citizens, the private sector and state actors at the local level (Baldy and Kruse 2019). One recent study of national public health organizations in the US emphasized the role of local government as a catalyst to improve food access (Lange at al 2019). However, the role of government as a food market participant has been largely ignored.

China's experience of state-led food provisioning localization highlights the key role of central and local government in governing food markets. The central government aims to balance the local with the national (and the global) by supporting local production and distribution, while enabling sourcing from afar. Balance, rather than local self-sufficiency, is the goal. Food localization in China is therefore better termed "food provisioning localization", characterized by the localization of food supply chains, territorialized responsibility for food security (including support for local production and locally-controlled wholesale), and community-based retail. Food provisioning localization is not seen as an exclusive alternative to long-distance supply chains but as a "counterweight" or complement to "non-local" food sources to ensure a stable and affordable supply of food in the city. The Chinese concept and practice of localization is therefore: (a) state led at different levels for different programmes, (b) territorially based in terms of official demarcation of provincial and prefecture boundaries; (c) focused on achieving food security of urban populations; (d) involves the entire food chain not just local food production; and (e) seeks to balance local and non-local food supply chain participation. The aim is therefore not to rely exclusively on local production but to combine a reliance on local and non-local products to yield the desired outcome of food security for all.

'Local' Responsibility System

While there is little consensus on the meaning of the term "local" in academic discussion on local food systems (Bowen and Mutersbaugh 2014), in China it is clearly related to administrative boundaries and two levels of governmental responsibility for food security (Zhong et al. 2019). There are four categories of urban centre in China: (a) the four large Municipalities directly administered by the Central Government i.e. Beijing, Tianjin, Shanghai and Chongqing); (b) sub-provincial capitals (15 in total including Nanjing, the capital of Jiangsu Province); (c) 279 prefectural-level cities each commonly administering a prefecture that includes urban districts, county and county-level cities; and (d) county-level cities (363 cities in 2017) (NBS 2018).

Responsibility for food system governance since the late 1980s has been localized to the provincial and city levels. State-led food provisioning localization is therefore essentially about holding different tiers of local government accountable for food security in their jurisdiction (Lang and Miao 2013). Two related policy initiatives from the central government are of particular relevance. The first is the Rice Bag system introduced in 1995 which tasks provincial governors with ensuring that there is a sufficient supply of grains and cooking oil in their province. Quotas of farmland protection and grain production are usually allocated and handed down to prefecture-level administrative regions. Second, the Vegetable Basket system, implemented since 1988, makes city mayors of the sub-provincial capitals and prefectural-level cities responsible for the supply of non-grain food to the urban population. City mayors and officials are permitted to employ various policy instruments to ensure a sufficient food supply and to stabilize food prices (Zhong et al 2019). Food shortages and price spikes in a city lead to the downgrading of a mayor's performance evaluation (The State Council of China 1994). In contrast to the West, where localization boundaries and the role of government are often undefined, food system localization in China therefore means a provincial level region for Rice Bag responsibility and a city-level region for "Vegetable Basket" responsibility. State-led localization of

food production is primarily implemented at the prefecture scale, hence the use of the term *Diquhua* ("prefecture-ization"). In 2018, 337 city mayors were responsible for the non-grain food supply.

With responsibility for the implementation of the Rice Bag and Vegetable Basket policies vested in provincial and city government, local governments have been extensively involved in the localization of food production, wholesale and retailing. Thus, state leadership is a notable feature of food localization in China. To incentivize local governments to fulfill their responsibility, they are required to participate in the central government's assessment of their local food security initiatives. To strengthen the implementation of state-led food provisioning localization, the State Council of China formalized the policy of performance assessments of the Vegetable Basket programme in 2017 (The State Council 2017). The assessment involved coordination among 10 ministries and the *Rules for Implementation of the Measures for Evaluating the Performance of City Mayors Responsible for Non-Grain Food Supply* (Ministry of Agriculture 2017) detail how to assess implementation performance (Table 1).

Food Chain Localization

State-led food provisioning localization in China is focused on the entire food chain from production to distribution to retailing to consumption, not just on where food is produced. Food chain localization is government-supported and embedded in political mandates at all levels. State-led food provisioning localization also aims to achieve a balance between state-led and market-driven forces to ensure food security for all. The idea of food provisioning localization is similar to the concept of SYAL (Local Agrifood Systems) proposed by researchers in France, which refers to the spatial concentrations of activities and organizations relevant to the whole agrifood system within a specific territory (Bowen and Mutersbaugh 2014). The focus on food chain localization is also embedded in some of the thinking around Alternative Food Networks (AFNs) (Haysom, 2020). However, neither SYAL nor AFNs have developed effective mechanisms to ensure universal access to healthy food.

In many countries, profit-driven food marketing leads to deprived communities – often called urban food deserts – with insufficient healthy food access (Psarikidou et al 2019). In countries such as the US, unaffordability and limited physical access to food have been related to shortages of community-based food distribution infrastructure (Bublitz et al 2019). Food-underserved communities arise not only where private business dominates food markets but also where food provision is dominated by public markets and limited access to food outlets. As part of the focus on the whole food supply chain, state-led localization in China pays close attention to the issue of food access through the "neighbourhood-ization" of food retail outlets (Zhong et al 2019). "Neighbourhood-ization" is an essential component of both the Vegetable Basket and Rice Bag systems of responsibility, and mainly refers to the neighbourhood-focused spatial organization of food retailing outlets.

Localization and Balance

State-led food provisioning localization in China is not motivated by opposition to the globalized food system and nor is it focused exclusively on promoting alternative local food production and supply chains. Rather, it seeks to balance the two. Central government efforts therefore also emphasize the importance of "large markets and extensive distribution networks" (Da Shichang he Da Liutong) (Ministry of Commerce 2006). The slogan "Nationwide Buying and Nationwide Selling" (Mai Quanguo, Mai Quanguo) is commonly used in government documents (Wang 2007, NMG 2018), underscoring the need for localities to buy food products nationwide and sell their food products nationwide. While policies of "Nationwide Buying and Nationwide Selling" and even "Globe-Wide Buying and Globe-Wide Selling" aim to control food price increases (Goldfoil Holding 2006), they are usually cited as goals simultaneously with food provisioning localization.

State-led food provisioning in China also applies the notion of "balance" to the urban food system. Besides striking a balance between local and non-local production, state-led localization harnesses

TABLE 1: Criteria for Assessing the Implementation of the Vegetable Basket Programme

Indicators (& weight)	Sub-indicators (& weight)	Content
Production capacity (24)	Area of vegetables (8)	Sown area of vegetables
	Yield of vegetables (8)	Total yield of vegetables
	Output of meat (8)	Output of pork, or beef & lamb
Distribution capacity (20)	Wholesale market planning (4)	Inclusion of food wholesale markets in urban planning
	Wholesale market development (10)	Layout of wholesale markets with turnover ranking top 1 and 2 (2); Facilities for transaction and cold storage (2); Food safety test within market (2); Management and fee (2); Demonstrated benefit for the public, assessed by the criteria issued in 2015 (Ministry of Commerce 2015) (2)
	Density of food retailing outlets (6)	Achieved specified number of food retailing outlets per residential community (administrative neighbourhood)
Quality and safety (24)	Administration of food quality and safety (10)	Demonstrates responsibility, 8 aspects in detail (1); Administration capacity building (1); Promoting adaptation of production standards (1); Regulatory institution improvement (1); Strengthening law enforcement and inspections (1); Strengthening law enforcement collaboration (1) 'Food safety city' designation (1)
	Level of food quality and safety (9)	Meets specified level of quality and safety of meat, aquatic products and vegetables (9)
	Meat traceability system development (5)	Percentage of traceable meat or construction of meat traceability system (5)
Guarantee and resilience capacity (24)	"Vegetable Basket Project" development supporting policy (8)	Production supporting policy (2); Distribution supporting policy (2); Consumer subsidy (2); Emergency plan (2)
	Price stability (4)	The rank of price index (4)
	Food reserve system (4)	Food reserve system and institution (4)
	Monitoring and early warning system (4)	Monitoring and early warning system for the supply and price of vegetable, fruit, meat, eggs, milk and aquatic products, monitoring and early warning indicator (3); Monitoring and early warning information platform (1)
	Coordination system (4)	Presence of a leading team and standing office for "vegetable basket" work (4)
Degree of citizen satisfaction (8)	Degree of citizen satisfaction (8)	The score of citizen satisfaction based on survey
Veto	Event pertinent to food quality or safety	Whether emergencies pertinent to food quality or safety occurred more than three times
Sources: Adapted from Ministry of Agriculture (2017)		

local and non-local economic forces to balance each other with the goal of ensuring affordable and accessible food for all. In the wholesale sector, for example, city government harnesses state-owned businesses (local) and private businesses to compete with each other to facilitate affordable food prices. Government can also control the wholesale food market in the public interest (*gongyixing*) by using the "golden share" that gives government as shareholder the right of decisive vote (Ministry of Commerce 2015). Food price monitoring is the responsibility of a network including wholesale

markets, some supermarkets and wet markets that are required to report transaction prices to the local government.

Implementing Localization in Nanjing

Study Methodology

To better understand the dynamics of food provisioning localization in China, this paper uses Nanjing City (a sub-provincial capital and seat of both the provincial and city or municipal governments) as a case study. The rest of the paper draws on various data sources and documentation to analyze the linkages between state-led food provisioning localization and urban food security in Nanjing. Both questionnaire surveys and online spatial data were collected. The research team conducted four questionnaire surveys with the Hungry Cities Partnership in Nanjing between 2015, 2017 and 2019. A city-wide household food security survey was conducted in July 2015 with a random sample of 1,210 households (Zhong et al 2019). Second, a small enterprise food vendor survey was conducted from January to March 2017 with 864 vendors (Zhong et al 2019). Thirdly, a survey of 255 youth food vendors (under 35 years old) was conducted between July and August 2017. Finally, a supermarket survey was conducted from January to March 2019, which collected information from supermarket companies and their outlets, and interviewed outlet managers and consumers. The surveys were complemented by online spatial-based data showing the locations, address and names of wet markets and supermarkets, abstracted from the BaiduMap (map.baidu.com), TencentMap (https://map.qq.com/) and Amap (https://www.amap.com/).

In addition, statistical data about food production was abstracted from statistical yearbooks. Information about food enterprises and food markets were also collected from pertinent websites. Finally, policy documents, laws, regulations and planning documents relevant to food localization were collected and reviewed. These were sourced from online academic websites (such as https://www.cnki.net/), legislative, governmental and newspaper websites. Four medium-term urban plans (with planning periods of 1989-1992, 1993-1997, 1996-2000 and 2008-2012 respectively) and two annual plans (in 2017 and 2018) were consulted for information on the evolution of food provisioning localization planning in Nanjing.

For a sub-provincial city such as Nanjing, the capital of Jiangsu Province, "local" operates at two different scales and levels of responsibility. The "Rice Bag" policy is the domain of the provincial government and includes Nanjing and the rest of the province, while the "Vegetable Basket" policy is the domain of the Nanjing Municipal Government

'Provincialization': Province-level Grain Production Localization

The State Council issued its Measures for Evaluating the Performance of Provincial Governor Responsible for Grain Security in 2015 (The State Council, 2015). To meet these Rice Bag responsibilities, Jiangsu Provincial Government in turn issued its Measures for Evaluating the Performance of Grain Security Responsibility (GSR) in 2016. The evaluation indicators of GSR mainly include grain production capacity, increasing wiliness of farmers grain farming, improving grain distribution, state-owned grain enterprise reform, local grain reserves, stabilizing local grain markets, grain quality, and implementation monitoring (Jiangsu Provincial Government, 2016). These eight indicators are further broken down to 62 sub-indicators. Quotas about farmland protection, grain sown area and production are handed down to sub-provincial city and prefecture-level municipal governments to implement in their jurisdictions.

'Prefecture-ization': City-Level Non-grain Food Production Localization

To meet the administrative requirements of the "Vegetable Basket" system, urban food policies have been developed and implemented in many Chinese cities. Nanjing's plans clearly show the

evolution of food provisioning localization as a concept and policy focus over time. From the outset, localized food production was fundamental in Nanjing's food provisioning localization planning. The first plan for the Vegetable Basket programme (1989-1992) centred on how to promote the local production of food, specifying production targets and goals and establishing a self-sufficiency ratio of meat, vegetables, milk, eggs and aquatic products. The plan incorporated a package of policies to support local production of fresh produce including vegetables, eggs, and milk. These polices included credit support, subsidies, reduced taxes and fees, minimum support prices (price floors), and the establishment of a new public fund for the "vegetable basket program". Subsequent plans continued to emphasize a self-sufficiency ratio of key food items through local food production. However, localization also evolved from this focus on food production localization to include food distribution localization. Thus, food provisioning localization in Nanjing has increasingly involved the localization of production, wholesale, and retailing.

'Park-ization': Wholesale Localization

In China, "park-ization" (Yuanquhua) of food wholesaling refers to food wholesaling industrial parks developed by local governments or private companies to accommodate food wholesalers. Chinese cities such as Nanjing have developed a mode of hybrid public-private food provisioning system in which some food marketplaces are publicly owned and operated by private companies (Zhong et al 2019). In particular, the hybrid public-private governance structure of wet markets ensures the "neighbourhood-ization" and sustainability of wet market operations, which effectively prevents a monopoly of food retailing. The hybrid governance structure has also been used in wholesale food markets, which leads to food wholesaling being spatially concentrated without a monopoly forming (Zhong et al. 2019).

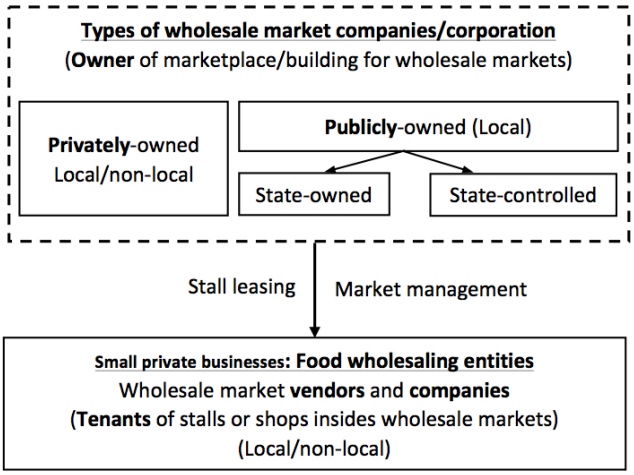
Wholesale localization refers to local ownership of and decision-making over food wholesale markets. To fulfil the requirement of the Vegetable Basket responsibility system, four medium-term plans of Vegetable Basket Project (with planning periods of 1989-1992, 1993-1997, 1996-2000 and 2008-2012) were implemented. Nanjing's second Vegetable Basket Project plan (1993-1997) placed more emphasis on the development of wholesale food markets. Bythe late 1990s, there were five main wholesale markets (NMG 2003). The Plan proposed the development of seven wholesale markets: four for vegetables and one each for aquatic products, poultry and pork. The 1996-2000 Plan generally followed the 1993-1997 Plan's strategy of wholesale market development. To relocate wholesale markets to inner city areas, the 2008-2012 Plan proposed to develop two new wholesale markets, for grain and non-grain food, respectively. The 2017 and 2018 plans turned to the governance of wholesale markets, supporting improvements in their management.

These wholesale markets were either invested in and owned by the municipal government or the provincial government in Nanjing. The wholesale company that specialized in trading frozen meat was transformed from a state-owned to a locally-owned private company in 2003, and was then acquired by a non-local company in 2009 (Tianhuan Group 2015). In 2006, a produce wholesale market selling vegetables, fruits and meat was opened, also operated by a private, locally-owned company (Goldfoil Holding 2006). Currently, food wholesaling in Nanjing is mostly locally-owned, with one state-owned and one state-controlled company dominating the provision of food.

With new markets established and some old ones closed, by 2019, there were five main food wholesale companies in Nanjing (Zhong et al 2019). Three of the five were locally-owned, with a total turnover estimated at 55% of all food wholesale in the city (Zhong et al. 2019). Of these three, one is privately-owned, one is state-owned (by the Nanjing Municipal Government) and one is state-controlled (by the Nanjing Municipal Government). State-ownership includes ownership by central government and local governments. The state-controlled companies refer to those partially owned and significantly controlled by a government. The

state-owned wholesale corporation and state-controlled wholesale corporation are estimated to supply more than 60% of grain and fresh produce to the city's residents (Zhong et al 2019). All the wholesale markets are operated as a "corporation plus small private business" model (Figure 1), the corporation leasing out stall space to small enterprise vendors rather than wholesaling the food itself (Zhong et al 2019).

FIGURE 1: Relationship between Wholesale Market Owner and Wholesale Vendors



'Neighbourhood-ization': Retail Localization

The "neighbourhood-ization" of food retail operations in Nanjing refers to how of retailing outlets, especially for fresh produce (vegetables, fruits and fresh meat), are deliberately geographically dispersed across neighbourhoods, enabling relatively even and equitable access for consumers (Figure 2). Urban planning in China is mandated by the central government to establish food markets to keep pace with urban population growth (Zhong et al 2019). The Code of Urban Residential Areas Planning & Design (GB 50180-93) mandates that one wet market should be established for any residential area with a population of more than 10,000 people (MHURD 2016). In 2010, more than half of the wet markets in Nanjing were state-owned or collectively-owned, including by community (neighbourhood) committees (Xia and Chen 2010). To increase public ownership, the Nanjing Municipal Government issued a policy that required the transfer of ownership of wet markets in new neighbourhoods be to the sub-municipal government (NMG 2011). In practice, this underscores the notion of food as a public good, and the right to food.

Ownership of the buildings and infrastructure of wet markets is also localized. The local government is responsible for selecting the wet market management company to operate the market and lease stalls to food vendors. These publicly-owned wet markets are commonly operated with a three-tier model (Figure 3) in which the property owners of wet markets lease venues to management entities and those entities in turn rent out the food stalls to vendors (Zhong et al. 2019). According to the HCP food vendor survey conducted in 2017, about 35% of vendors were local residents born in Nanjing or with Nanjing *hukou* (household registration) and 65% were from outside the city (not born in Nanjing nor with Nanjing *hukou*). The aim here is not to ensure that all vendors are local, but rather to ensure that all residents have access to wet markets, irrespective of who is actually selling the produce. In terms of physical access to food, the idea is that fresh vegetables, fruits, and fresh meat are easily accessed and can be bought within walking distance.

"Neighbourhood-ization" of food retail also refers to neighbourhood-based (or centred) spatial organization of other food retailing outlets including supermarkets and small fresh produce shops. There were 13 supermarket companies operating supermarkets in the city in 2019 (Table 2). Of these, only two were local but they accounted for about 72% of the 170 supermarket outlets (retail locations) in the city. The Suguo Company was the largest, with 122 shops selling fresh produce (Suguo Supermarket Company 2015). The Nanjing Municipal Government has aimed to ensure no less than four food outlets in any neighbourhood since 2017 (including a wet market, a supermarket with a fresh produce zone, a fresh produce shop within the neighbourhood, and an e-commercial retail terminal) (NMG 2017). This organizational strategy ensures relatively high and equitable physical and economic access to food.

FIGURE 2: Distribution of Wet Markets and Supermarkets in Nanjing in 2019

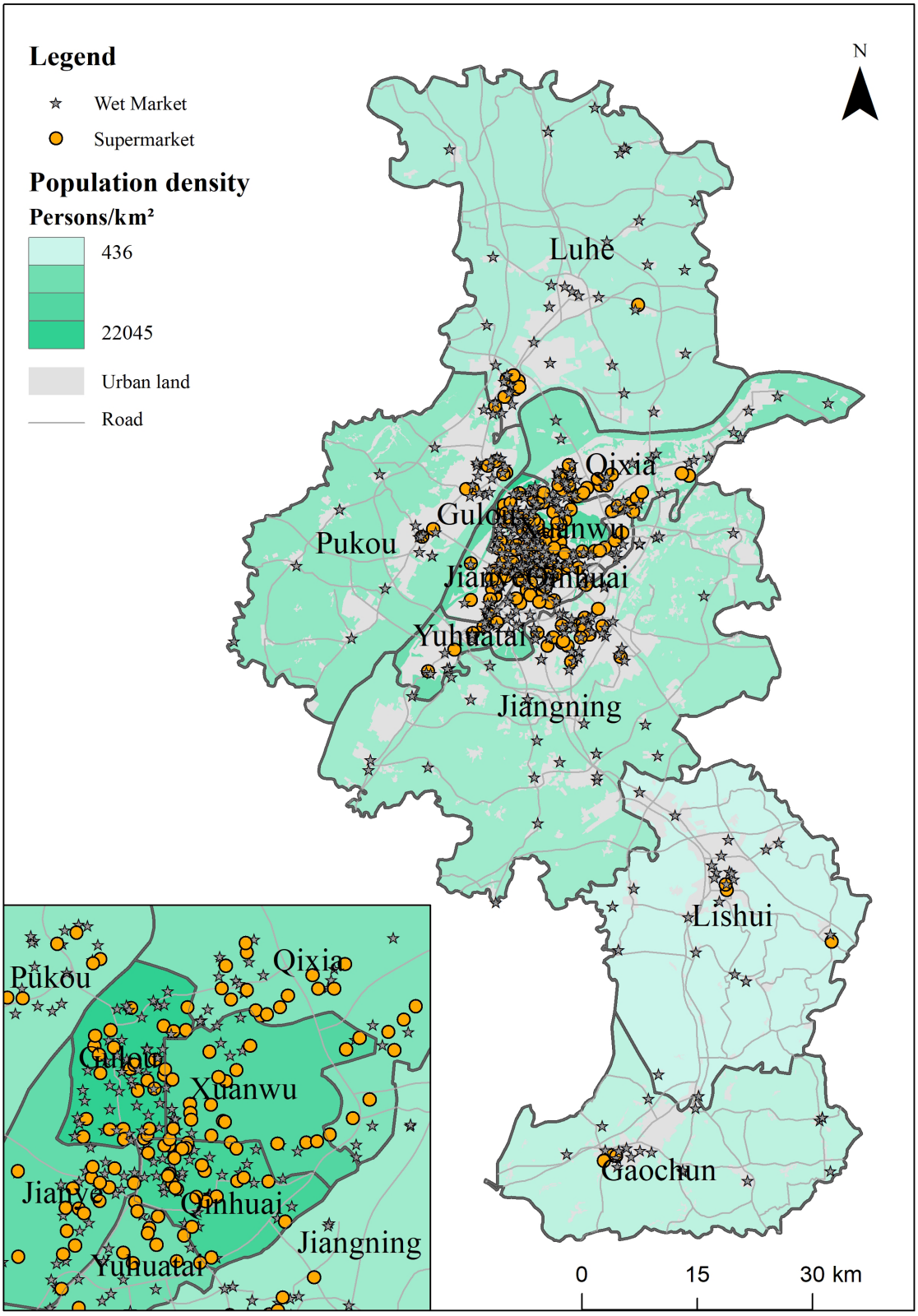


FIGURE 3: Ownership and Management Structure of Wet Markets

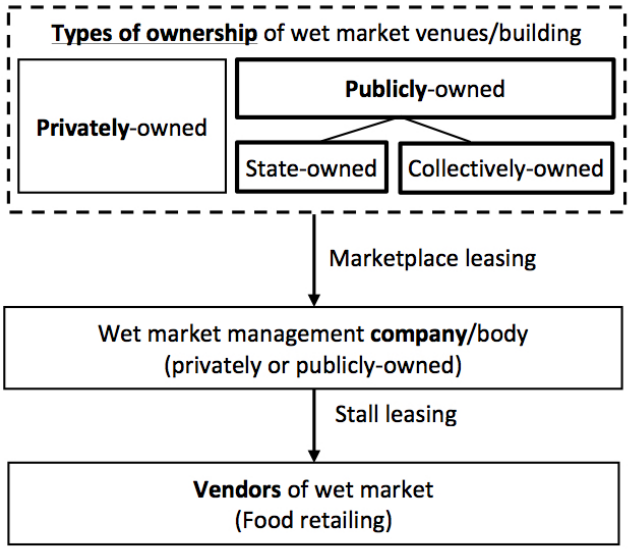


TABLE 2: Supermarket Companies and Outlets in Nanjing

	No. of companies	No. of outlets	Percentage of outlets
Foreign	5	15	8.8
Domestic	6	32	18.8
Local	2	123	72.4
Total	13	170	100.0

Sources: Calculated from Nanjing supermarket survey conducted in 2019

Localization and urban food security

State-led food provisioning in the form of the Vegetable Basket policy has led to a notable increase in the local production of vegetables, fruit and aquatic products since the late 1980s. In the 30 years since the beginning of the implementation of the policy in 1989, the total production of vegetables, fruits and fishery products increased by 2.7 times, 29.4 times and 3.1 times respectively (NMBS 2019). In contrast, the total production of grain in the Nanjing area decreased by about 36% and the total production of cooking oil has decreased by about 38% between 1988 and 2018. This can be attributed to changing dietary needs in Nanjing accompanying rapid urbanization and higher revenue from producing non-grain food. The area under farmland in Nanjing underwent a notable decline of about 24% between 1996 to 2016 (from 309,367 ha in 1996 to 236,000 ha in 2016 (Ministry of Natural Resources, 2021), which led to a decrease in the area for sowing crops. Because it was difficult or even impossible for Nanjing to increase production of both grain and non-grain food, the Jiangsu Provincial Government reduced the quota of farmland used for grain and cooking oil production. Although the farmland of Nanjing accounted for 5.2% of total farmland in Jiangsu Province, the proportion of farmland designated for grain and cooking oil in Nanjing only amounted to 2.8% of the province's total farmland. In fact, while grain production in Nanjing decreased from 1990 to 2019, production in Jiangsu Province increased from 33 million tons in 1990 to 37 million tons in 2019 (Jiangsu Bureau of Statistics 2021).

As fruits and vegetables are crucial for a healthy diet, affordability and physical access to healthy food is an important indicator of urban household food security (Wallace et al 2019). A sufficient supply and stable prices are the two key performance indicators to assess the implementation of the Vegetable Basket programme. In Nanjing, the policy has clearly influenced food availability, affordability and accessibility for urban households. The HCP household food security survey, for example, showed that most households have stable access to food. About 99% of the 1,210 interviewed households reported that they had adequate food during the previous 12 months (Zhong et al 2019). Only 3% of households reported that vegetables were unaffordable for most households, with only 3% of households reporting that they were unaffordable some of the time. Grain and cooking oil were almost universally affordable; the food items that fall within the Rice Bag policy.

Wet markets are the main source of heathy food in Nanjing (Zhong et al 2019) and physical access to these outlets has continuously improved since the implementation of the Vegetable Basket programme. The number of wet markets (covered or indoor marketplaces) increased from 28 in 1995 to 152 in 2000 to 351 in 2015 and to 414 in 2019. This equates to about one wet market per 94,927 people in 1995, 19,047 people in 2000, 19,100 people in 2015 and 17,082 people in 2019. About 78% of surveyed households were less than 2km

walking distance from the nearest wet market. In addition to wet markets, all supermarkets are required to designate part of their store as a "fresh produce zone" (Zhong et al 2019). About 80% of surveyed households live less than 2km from the nearest wet market or supermarket (NMG 2012). More than 90% of surveyed households bought fresh vegetables and fruit, and fresh pork, beef, chicken and fish within their neighbourhood or within easy walking distance. Grains and cooking oil are easily accessed with 87% of households buying rice and 83% buying cooking oil within their neighbourhood or in walking distance. State-led food provisioning localization in the form of "neighbourhood-ization" has thus contributed to improving physical access to food. Almost all surveyed households reported easy access to food retail outlets and the found a high level of physical access to fresh produce such as vegetables, fruits beans and eggs in Nanjing (Zhong et al 2019).

Inclusive Localization

State-led food provisioning localization in Nanjing aims to be inclusive in at least two main ways. First, there is the participation of both the public and private sectors in the food system. State-owned or state-controlled companies participate in the wholesale food markets and some wet markets are owned by local governments or community committees. However, these publicly-owned wet markets are not allowed to be managed directly by local governments and their marketplaces are commonly leased to private companies. This entails separation of the administration and management of wet markets, as required by the State Council since 1998 (Zhong et al 2019).

A second aspect of inclusive food localization is the integration of small-scale food businesses. As noted above, both food wholesaling markets and wet markets are operated under the model of "corporation plus small private business". This model ensures that small businesses can participate in local food markets and prevents monopoly by large corporations. As a result, in Nanjing, the food wholesale market and wet markets are more like hubs of small food businesses than a single food market.

Inclusiveness does not mean that only local actors can participate in Nanjing's food system. State-led food provisioning localization exhibits openness to non-local products and people and there is extensive participation of non-locals (migrants) in local food markets. Besides non-local vendors dominating wholesaling, many also participate in food retailing markets. As Table 3 shows, about 65% of those participating in food retailing markets in 2017 were migrants. Market stalls in wholesale markets are also mainly non-city vendors. According to the HCP survey of youth vendors in 2017, for example, around 13% of those in the biggest non-grain wholesale market (Zhongcai Market) were local vendors and around 87% were non-local. By having numerous individual traders or companies within the marketplace, competition between them is ensured, which avoids price monopoly (Zhong et al. 2019).

TABLE 3: Frequency of Local and Non-local Food Vendors

	Type			Total
	Wet market vendor	Food store (outside wet markets)	Street vendor	
No. of local	223	49	26	298
No. of non-local	412	95	49	556
Total	635	144	75	854
% of non-local	65	66	65	65

Source: Calculated from Nanjing City retailer questionnaire survey, conducted in January and February 2017

Conclusion

The demand for food in China has increased rapidly due to population growth, urbanization and changing dietary patterns. To address the challenge of potential food insecurity in cities, the "Rice Bag" and "Vegetable Basket" programmes were put in place. These policies can be seen as a form of food system localization different in motivation, form and outcome to localization strategies developed in and for the urbanized North and now being exported to the South. To reflect these differences, this paper uses the concept of "state-led food provisioning localization" to describe the food localization process in China. Spatially, state-led food provisioning localization is not focused on the city hinterland or city-region but rather on the administrative units of province and prefecture. As the paper shows, state-led food provisioning localization in China is characterized by central state oversight and monitoring and the devolution of responsibility for the food supply to two levels of governance: the provincial (for the grain supply) and the municipal (for the non-grain supply). While there is an emphasis on increased local food production and supply, this is not to the exclusion of longer food supply chains for some products. Indeed, localization seeks to achieve a balance between local and long-distance supply chains.

State-led food provisioning localization is food security and whole-of-food-system oriented, which makes it distinctive from the bottom-up civil society-driven calls for food localization in western countries or the city-region emphasis of the FAO, UN Habitat and Milan Urban Food Policy Pact. Localization in China aims to ensure a stable supply of affordable food because food access has been regarded and treated as a public good by government. Besides being focused on food security rather than food quality, environmental sustainability or rural development, the main function of state-led food provisioning localization is to balance the local and non-local, and the public and private. As the case study of Nanjing shows, state-led food provisioning localization has positive effects on food availability, food affordability and physical access to food at the urban household level, and contributes to easy household access to affordable and healthy food such as fresh vegetables, fruits, fish and beans within easy walking distance.

The research literature on food localization to date has been dominated by the perspective of North American and European scholars who have focused primarily on the anti-globalization and anti-agribusiness stance of alternative food networks, the possibilities for enhancing the food supply role of local small farmers, and the desirability of reconnecting producers and consumers. Recently, these perspectives and priorities have been "exported" by international agencies such as the FAO and others through the City-Region Food System approach, the New Urban Agenda and the Milan Urban Food Policy Pact. One of the primary failings of these western-dominated approaches to localization is their failure to prioritize and address urban food insecurity, a particular challenge in the fast-urbanizing Global South (Crush et al 2020). In this respect, the Chinese model of localization needs much closer attention since it has the delivery of food security to all urban residents as its primary objective. While the model is not necessarily replicable in every detail, national and local governments in the South need to refocus their attention away from Northern localism and focus instead on the different components of localization models, such as that in China, developed under conditions of rapid urbanization and food system transformation more similar to their own.

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