Governance and Actions for Resilient Urban Food Systems in the Era of COVID-19: Lessons and Challenges in China

Huidan Xue 1,*, Yujia Zhai 2, Wen-Hao Su 3,* and Ziling He 2

1 School of Economics and Management, Beijing University of Technology, Beijing 100124, China
2 Beijing-Dublin International College, Beijing University of Technology, Beijing 100124, China
3 College of Engineering, China Agricultural University, Beijing 100083, China
* Correspondence: huidan.xue@bjut.edu.cn (H.X.); wenhao.su@cau.edu.cn (W.-H.S.)

Abstract: The COVID-19 pandemic has drastically challenged urban food systems, has hurt the resilience and fundamental function of urban food systems and also accelerated the trends of digitization and changing preferences of consumers in cities. This research conducted a qualitative analysis of the discourses, actions and interactions of different actors in the urban food systems in China during COVID-19 using an actor-oriented approach and discourse analysis. This research finds that stricter regulations and policies have been implemented by governments to regulate the food supply chain and ensure human health. Local community service personnel, volunteers, stakeholders along the food supply chain and consumers formulated collective actions during the pandemic yet chaos and discourse distortions also emerged at different stages. The pandemic is a preamble to changes in consumers’ preferences and food supply chains in urban communities. There were significant structural changes and a dual structure of urban and rural food systems, where unbalanced supply and demand existed. Collective actions with community governance and an innovative food business model to digitize flows and easily adapt to shocks in food systems are required.

Keywords: food systems resilience; urban food systems; food supply chain; COVID-19; actor-oriented approach; governance; discourse analysis

1. Introduction

Since the beginning of 2020, the coronavirus (COVID-19) pandemic has spread around the world at an alarming rate, affecting more than 200 countries and regions, while measures to protect public health have led to unprecedented highs in unemployment and rapid and massive economic downturns at country and global levels. The rapid global spread of the pandemic has disrupted food systems in numerous cities to various extents [1]. Countries have taken a series of unprecedented and stringent measures to respond to the menacing global epidemic and contain further spread. Since the outbreak of the COVID-19, major cities in most countries around the world have implemented travel restrictions of different degrees, such as strict blockades of countries or blockades of cities at the fast-speed spreading time of COVID-19, imposing strict stay-at-home orders that require residents to stay home except for “essentials” and require all retailers except suppliers of daily necessities to close their business temporally. Moreover, food insecurity issues have become increasingly prominent with low- and middle-income groups beginning to be affected by the pandemic [2], and the resilience of urban food systems is being severely impacted [3]. Due to information asymmetry, fear of infection and home isolation, panic buying of food and hoarding have occurred to varying degrees in almost every country, putting unprecedented pressure and challenges on urban food systems from the demand side globally, thus causing food prices to soar and even causing social unrest in some areas [4–6]. In the future, with increasing urbanization, global population growth, and a rise in the international movements of populations, the frequency of the occurrence of
severe epidemics or pandemics is likely to increase significantly, and the corresponding food crisis in cities and the impacts on urban food systems are likely to intensify if actions are not taken effectively.

Strengthening the resilience of food systems is a critical part of achieving the United Nations 2030 Agenda for Sustainable Development Goals (SDGs) [7,8]. Goal 2.1 of SDGs states “By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round”. Goal 12.3 states that “by 2030, halve global per capita food waste at the retail and consumer levels and reduce food losses along production and supply chain, including post-harvest losses”.

China’s total population will reach 1.45 billion by 2030 when the level of urbanization will be close to 70% [9]. By 2050, the global population will reach 9.8 billion, with two-thirds living in cities [10]. As industrialization and economic globalization continue to advance and there is more cooperation and coordination between different countries or regions, building a more resilient urban food system is imperative.

The urban food system is composed of a series of activities, functions and relationships to meet the needs of food for urban citizens [11]. It covers production, transhipment, storage, transportation, processing, packaging, wholesale, retail and other aspects [11]. Strengthening the resilience of urban food systems requires the active participation of relevant actors such as producers, intermediaries, importers, transporters, wholesalers, retailers, processors, shopkeepers, street shops owners, public institutions, government departments, and food associations [12–14]. The robust functioning of urban food systems depends on the collaboration of supermarkets, logistics and other stakeholders in food systems [15]. The traditional urban food system mainly involves import, sale and distribution, consumption and distribution, and food services, while production, harvesting, processing and storage are mainly undertaken by rural areas [16]. In recent years, agriculture and food processing have gradually become increasingly marginalized in urban development and planning [17].

Food system resilience has the potential to buffer, self-organize, learn and adapt to shocks such as climate change, supply shortages, price volatility, social unrest and economic disruption [18,19]. As an industry that provides “essential services”, supermarkets, convenience stores, and farmers’ markets in most cities were allowed to operate as normal throughout the whole era of COVID-19. Frontline workers (including farm workers, meat packers, and workers responsible for transporting food) must ensure food safety throughout the food circulation process and do their best to maintain the functioning of the urban food system. As food contamination is possible along the entire food production chain (production, processing, distribution, cooking), from fisheries or farms to forks, urban food systems are particularly vulnerable to facing major public health events and crises and are closely associated with human health [20,21]. COVID-19 virus poses a serious threat to food security due to its possible spread through food surfaces, placing higher demands on the governance of food systems supply chains and their workforce [3,22–25].

The Wuhan Huanan wet market, which was considered the source of the epidemic and where the COVID-19 disease was found initially, has been closed, and the wildlife trading markets in cities across the country have also been urgently closed down. Since the lockdown of Wuhan, various food trucks from different areas of China have urgently rushed to Wuhan to provide vegetables, meat and other foods to support its urban food system. After the implementation of closed-loop food supply chain management in Wuhan communities and the prohibition of supermarket food retail, the community assumed the responsibility of the terminal supplier of the food supply system for urban residents, and the urban food system that Wuhan had built and maintained for many years almost collapsed. In early June 2020, another small-scale outbreak occurred in Beijing’s Xinfadi Agricultural Products Wholesale Market. Many food stalls including seafood, meat and vegetable stalls of Xinfadi Agricultural Products Wholesale Market were rapidly closed down and blocked, and supermarkets and grocery stores in many areas removed imported seafood such as salmon overnight. Although the COVID-19 pandemic is a rare crisis, other extreme events in the
future may have similar social impacts on food systems, so it is important to use COVID-19 as an example to analyze the impact on food systems in countries and identify effective solutions [26–29]. In the era of the post-COVID-19 pandemic, strengthening the resilience of urban food systems has never been more urgent than ever [30]. With fast-pace urbanization and globalization, it is particularly important to focus on urban food system governance and explore how different actors (public and private entities, civil society, consumers, etc.) interact and contribute to the food system [31], especially in crises. The unprecedented pandemic has brought a multidimensional impact on urban food systems, and people have become more aware of the importance of resilience and governance of urban food systems in the face of crises and supply-demand imbalances. The urban food system is an important part of urban development. The urban food supply has higher requirements for environmental sustainability, human health and social justice in the post-COVID-19 era. Effective governance through multi-agent participation and top-level design optimization can improve the resilience of the urban food system.

This study aims to focus on discourses and actions of urban food systems in China in the era of COVID-19 with qualitative insights to the decision making of distinctive actors who aim, through policy instruments, discourse coercion, and collective actions, to restore resilience of urban food systems in China. Therefore, in order to explore the actions of different actors in urban food systems and provide a theoretical framework and ideas for improving the resilience and governance of China’s urban food system, this paper focuses on three questions: (1) What challenges are China’s urban food systems facing in the era of COVID-19? (2) How have actors in urban food systems produced knowledge and practice through discourse and action to restore resilience in urban food systems since the pandemic? (3) How can urban food systems be optimized to strengthen the resilience of urban food systems in the post-pandemic era? To address the research questions, this study specifically analyses the discourses and actions of the actors that affected the decision-making processes regarding urban food system activities in the era of COVID-19 using an “actor-oriented” and a “discourse analysis” approach. We focus on social interfaces within the urban food systems in China, increasingly policy relevant in the context of the relatively recent emergence of a suite of actor-focused policies in the crises.

After a review of the relevant literature in Section 2, this article continues, in Section 3, to discuss the research methodology and data/information collection methods. Section 4 analyzes the results regarding challenges faced by food system and responses of different actors in urban food systems to the COVID-19 crisis. This article addresses discussions and reflections in Section 5. This article discusses the policy implications in Section 6.

2. Literature Review

Many scholars have studied the resilience and governance of the food system. Governance arrangements and government policies play an important role in food security outcomes in urban settings [32,33]. Ensuring the resilience of food systems in the era of post-COVID-19 is also critical [34]. Urban agriculture provides significant support for urban food systems. Talukder, et al. [35] analyzed Bangladesh’s food system due to its inadequate resilience of food system, especially its food supply chain, which has led to increased food insecurity and poverty in the country amid COVID-19 and urban agriculture provides significant support for urban food systems. Nchanji [36] used an ethnographic study consisting of participant observation, informal conversations, focus group discussions and interviews in Tamale to show the role of different governance models in solving the bottleneck of urban agricultural development and propose a governance system that may solve the bottleneck of urban agricultural development. Chen, et al. [37] elaborated a framework for assessing, monitoring and improving the governance of the food system, using Sub-Saharan Africa’s six peri-urban and urban areas of food chain governance as examples to validate the strengths and weaknesses of the framework’s role in identifying food system resilience. Arthur, et al. [38] used governance frameworks such as alternative food works, bioregions and foodsheds, rural-urban linkages, short food supply chains, and
city-region food systems and draws insights from real-life governance initiatives to show that local institutions such as local government units, for-profit food businesses, and NGOs may make food systems more sustainable if they are more involved in food systems.

Studies on the resilience and governance of urban food systems are crucial and different actors play different roles in urban food systems. At the same time, collaboration among different actors is a key factor in achieving effective governance [39]. Governments are the traditional actors in responding to food system crises and play a key role in ensuring food system resilience [40]. Warshawsky and Vos [11] compared seven papers that focus variously on food system governance to show more sustainable outcomes are possible if local initiatives embrace change across multiple scales. Campbell [41] used a case study of urban agriculture policy making in New York City to examine the power-laden operation of urban environmental governance, showing that to some extent citizen activists work with government officials to draw up food policy plans. Klimek, et al. [42] conducted an empirically grounded investigation of the values and practices of farmers’ markets in Vienna, Austria to emphasize the role that governance and social organizing play in successful markets as contributors towards sustainable urban food systems. Morrow [43] drew upon ethnographic research conducted in Berlin and New York that evaluated self-organization in community food initiatives to show that democratizing food distribution and redistribution policies through self-organization by community members may be a possible solution to unsustainable and unjust urban food systems. Minotti, et al. [44] compared the different paths that various groups of actors have taken toward the definition of urban food policy processes to show governance innovation and policy integration are strongly linked in the urban food system. Zhong, et al. [45] analyzed household survey data, unstructured interviews and government documents, regulations and laws in Nanjing to show the involvement of both public and private capital in markets may prevent market failure in food system operation. Vieira, LC reviewed the literature systematically to enhance people’s cognitive of the key components of sustainable and resilient urban food systems, increasing the potential for people to build consensus on food issues and participate in the governance of urban food systems Vieira, et al. [46]. Olsson, et al. [47] discusses the resilience potential of connecting urban–rural regions and re-coupling agriculture to regional food production through studies of peri-urban land. Raja [48] noted that after the wake of COVID-19, the opinion of food-related workers such as growers, emergency food vendors, bicycle couriers, food system planners, food justice advocates, researchers is critical to urban food systems. Balana, et al. [49] conducted telephone surveys of more than 1000 Nigerians and concluded that households are gradually replacing social capital as informal support institutions for food due to the impact of the pandemic on the food system. Guo, et al. [50] used qualitative research methods to investigate the importance of e-commerce in ensuring the safety of food supply to Chinese urban residents under the impact of COVID-19.

Consumer behavior is also an important aspect of studying the resilience and governance of urban food systems, with consumption behavior changing significantly during the COVID-19 period [51–54]. Chenarides, et al. [55] conducted online consumer surveys in two major U.S. metropolises. The study found that during COVID-19, consumers relied heavily on food delivery and pickup services and were prone to buying more food than usual. Dannenberg, et al. [56] shows that during COVID-19, online grocery retail in Germany has mainly expanded spatially to rural areas, but there has been little transition from grocery stores to e-grocery stores. Hirvonen, et al. [57] conducted a group survey of Addis Ababa’s representative household consumption and concluded that the food value chain is resilient to pandemic-related shocks.

Although considerable research has studied urban food systems, especially along the supply chain. However, studies with theoretical analysis framework on the discourses and actions of different actors and their collective actions to govern urban food systems are rare. While urban food systems in crises is a typical common pool governance issue with complex discourse and knowledge emerges, yet most research are purely analytical or empirical studies without employing theories of governance and common pool. The
reflections on how to improve the resilience of urban food systems are still lacking. To fill in this gap, this study conducts a qualitative analysis of the discourses, actions and interactions of different actors in the urban food systems in China during the COVID-19 pandemic using the actor-oriented approach and discourse analysis, and reflects on the vulnerability and dependence of urban food systems.

3. Materials and Methods

3.1. Methodology Framework

To address the research questions, this paper adopts an “actor-oriented” and a “discourse analysis” approach to architecture an analytical framework. Long’s (1989, 1999, 2001) “actor-oriented” theory of social interfaces is significantly salient to study inter-actor influences. It assumes that actors’ decisions could be influenced by factors such as knowledge and the social, cultural and economic outcomes of taking particular decisions [58]. It attaches importance to the observation of the heterogeneity and dynamic actions of actors in society and pays attention to the “initiative” of individuals, that is, the process of individuals actively responding, adjusting and adapting to changes in the external environment, and explains macro social phenomena from a micro perspective [59]. The actor-oriented approach emphasizes the role of individuals and groups in creating and maintaining socially embedded networks and could imply how knowledge emerges and spreads among different actors, as it distinguishes between categories of actors, such as the state, civil society, and community, and could help in re-examine how adaptation is conceptualized [60]. The “discourse analysis” approach could be distinguished into four: discourses as communication, as texts, as frames and as social practices, and it analyses knowledge transmission, government propaganda, public opinion and actors’ discourses by collecting text information such as government documents, policy and report documents, traditional media, new media, records from respondents and laws and regulations [61–63]. Therefore, this study employs discourse analysis to observe how and to what extent discourses become institutionalized and affect social processes and outcomes by exploring official policies issued by governments, news and information from social media, literature, conversation contents from interviews, survey and observations.

3.2. Data and Materials

The COVID-19 virus severely hit China mainly in early 2020 and the government implemented an extreme strict lockdown and isolation policy that successfully controlled the spread of the virus before May 2020, after which China kept a dynamic zero policy with small clusters of epidemics occurring sporadically in certain places of China. Therefore, it is reasonable and feasible that most data and information regarding COVID-19 in this study are from 2020. In this study, we firstly collect and use data, text and information from news, social media, policy documents, interviews, participant action research, etc., for discourse analysis and to evaluate actions and inter-actions of actors in the urban food systems in China.

Specifically, the policy documents and notices are mainly collected from 2020 via official government websites. The depth interviewers with owners of community group buying” via “WeChat group + mini program” were conducted face to face in J city, Shan-dong Province of China in May 2020 and May 2021. This city is representative as it is known as Gallic Capital of China and is a major agricultural production and procession city. We also traced and recorded food-related events, reports, micro-blogs, and articles from social media including Weibo, Wechat Official Accounts, Douyin, and Kuaishou during the period January 2020–December 2020. We also conducted participatory research, visited and interviewed several communities, supermarkets, community group buying pick-up sites, grocery stores and farmer’s markets in J city and Beijing, as volunteers, observers and interviewers to record discourse and actions of different actors.
4. Results Analysis


Affected by the strict travel restrictions, residents’ shopping patterns have changed to a certain extent, and urban food insecurity issues have also emerged due to the imbalance between supply and demand. Urban food systems have faced multiple challenges since the outbreak of the pandemic as Figure 1 illustrated.

At the stage of food processing, due to the large-scale outbreak of the pandemic at a global scale, large food processing factories, packaging and distribution companies in many countries have seen clusters of employees infected with the coronavirus and could not function well [64]. For example, in early June 2020, at least three meat processing plants in Germany experienced a cluster outbreak, of which more than 400 employees of the largest meat processing company in the German county of Güterslo were confirmed to be infected, which greatly affected pork production, and pressed the pause button on exports to China [65]. Meanwhile, the Department of Public Health for England and Wales confirmed that 165 confirmed cases were found at meat factories in England and Wales and that more than 450 employees tested positive for the coronavirus. The plant was discontinued and closed temporarily [66]. There were also many clusters of infection in meat processing plants in the United States and Canada [67]. The frequent outbreaks of meat processing plants have had a significant impact on the supply of meat in relevant European and American countries due to labor insufficiency [68,69]. The closure of processing plants has led to a decline in slaughtering supply, and insufficient labor for meat segmentation, which has reduced production capacity to some extent [69]. In addition, food is susceptible to virus contamination at food processing, packaging and distribution stages, and the virus remains active for a long time through the cold chain and then spread to other countries through agricultural imports [70]. For instance, the cause of the cluster outbreak in Beijing’s Xinfadi Agricultural Products Wholesale Market in early June 2020 was probably the contamination of imported cold chain food, while the subsequent Qingdao outbreak has been scientifically proven to originate from cold chain imports [71,72]. Cold chain imported
goods increased the difficulty and workload of customs inspection and quarantine of imported food significantly and have led to more caution in China around imported food [73,74].

At the stages of wholesale, distribution and sales, traditional agricultural products and food sales channels are negatively affected and out of order, resulting in food waste in supermarkets, farmers’ markets, agricultural product distribution centers, and even farmland. First, during the pandemic, lockdowns, quarantines, social distancing and other measures to contain the spread of the virus led to temporary shortages and instability in food supply for cities. Supermarkets and convenience stores experienced low or temporary stock-outs due to panic buying and a lack of staff [75]. Secondly, during the epidemic, the sales of live poultry and live fish in China’s urban agricultural markets were suspended, and the nationwide ban policy was “one size fits all”. The cold and frozen industrial chain and supply chain of fresh meat in China were not compatible to the challenging and fast-changing situation of COVID-19. The sales mode of live direct sales could not be rapidly transformed into a modern urban fresh meat supply mode with integrated slaughtering, packaging, cold chain transportation, supply and sales processes, and consumers in China are more willing to purchase live livestock and slaughter on spot to ensure the freshness of meat. As a result, the supply of fresh poultry and fish in many cities was insufficient temporally in China, and the poultry and aquatic products farming, marketing and consumption industries faced great difficulties. In addition, a cluster of epidemics in Beijing’s Xinfadi Agricultural Products Wholesale Market in June 2020 caused many farmers’ and wholesale markets to suspend operations [76], putting food sales under great pressure.

At the stages of transportation and distribution, travel restrictions, lockdowns and strict stay-at-home policies disrupted the food transportation and distribution system [77,78]. In many cities, there is a serious shortage of food trucks, loading and unloading trucks and drivers, and cities’ food supply has been disrupted and even interrupted for a time as a series of chaos emerged such as garbage trucks transporting food in Wuhan and raised a surge of negative public opinion [79]. Road restrictions and street blockades between urban and rural areas or between different cities have led to longer food supply chains, reduced varieties of food on the market, food spoilage and wastes, contamination and depletion of food in the distribution process [80]. Fresh vegetables, fruits and other perishable foods that are hard to store for long or have strict transportation conditions encountered quality issues such as short shelf life, poor quality of goods on the shelf, and food waste due to the longer transportation time [81,82]. The lack of healthy young and middle-aged people in the family, coupled with factors such as the suspension of dine-in or even the suspension of takeaway, and the insufficient number of logistics and distribution personnel have led to difficulties in food procurement and food insecurity for the elderly living alone, the disabled, and many other vulnerable people in cities [83]. Awareness and demand for hygienic, healthy and nutritious food consumption among consumers have increased dramatically [84], and orders with the “community-supported agriculture” mode in many developed and emerging countries have surged [85]. However, due to limited supply, insufficient number of employees and obstacles in logistics and distribution during the epidemic, it is difficult for the “community-supported agriculture” mode to meet the surging needs of customers [86]. Due to the fear of infection by takeaway merchants and delivery workers, hospitals and personnel from other front-line departments such as volunteer service stations in the fight against the COVID-19 have experienced insufficient and unstable food supply temporally at the initial chaotic stage of the epidemic.

For consumers in cities, different categories of food exhibit different imbalance and instability between supply and demand, and the consumer price index for food has upward pressure in the short term [3]. Increased consumption of long shelf-life foods such as rice, flour and canned food, had higher local prices, increasing the cost of daily diets for vulnerable people who depend on low-value foods and heightening concerns about food insecurity in cities [3]. Due to the travel restrictions and the stay-at-home policy, the frequency of outdoor purchases has dropped significantly. The demand for fresh
fruits, vegetables and other foods of short shelf-life, high storage costs and vulnerable supply chains has been quite unstable [52]. Many products have experienced serious price fluctuations with hikes and spikes within weeks due to unstable demand [87]. The consumption demand for fresh meat, seafood and other products were sluggish in China temporarily due to unclear transmission routes of the COVID-19 virus, fear caused by serious information asymmetry, and lower incomes of low-income groups in cities [88–90]. For example, China has closed the wildlife trading market including farmed wild animals, the entire industrial activities have been suspended or even banned [91], and urban residents have also stopped consumption of wild animals due to fear of the infection of zoonotic diseases. The catering industry in cities has shrunk sharply, restaurants, street food booths and food markets in most cities have closed their business, the incomes of food service operators, businessmen and workers have been affected [92], and psychological factors such as worries and fears concerning infection of consumers also hindered the recovery of the catering industry in the short term [93–95]. Moreover, the population composition of cities is complex, and cities are not only places where permanent residents live but also places where countless migrants from all over the country and even the world live for a long time [96]. At the early stage of the epidemic, vulnerable groups who originally lived in cities for a long or short period, such as homeless people, slum households, urban poor and low-income families, and migrant workers, faced difficulties in obtaining food [97]. In many countries, food relief programs organized by government social security institutions, non-profit organizations and charities were negatively affected and suspended at the early chaotic stage of the pandemic [98]. Those who depended on relief food supplies faced severe food insecurity problems, and food shortages, price instability and prolonged periods of hunger can even cause social unrest [24].

A series of challenging issues arising around the urban food supply system have put forward new requirements for the reform and improvement of urban food systems, and at the same time, stimulated the actions and interactions of relevant actors in urban food systems.

4.2. Response of Relevant Actors in the Era of COVID-19

As the pandemic spreads globally, actors in the global urban food system have quickly adopted multiple and innovative response measures to participate in food governance to alleviate the impact of the pandemic on the urban food system and improve the ability to ensure the stability of food supply and food security in urban communities. The urban food systems in China have shown resilience and self-innovation after a series of shocks from COVID-19 although temporal chaos has taken place. The story lines of different actors in urban food systems are formed by discourses and actions. In the framework of the administrative governance system in China, policy formulation and implementation is from the top to the bottom. However, in the framework of government policies of urban food systems in China in the era of COVID-19 pandemic, it is found that actors at different levels have different interpretations of policies and take different actions, which have had bottom-up influences on policies and provided the background for the formulation and implementation of policies for central government in the next stage. The discourse of national policies proposed by the central government is transmitted from top to bottom within the framework of the existing administrative governance system.

4.2.1. Government: Promptness, Accountability and Collaboration

To a large extent, national policies and actions play a fundamental role in the governance of urban food systems. The government regulates and prohibits conduct in a given territory through promulgated statutes and regulations. The complexity of urban food systems determines that the governance of urban food systems is inseparable from sound infrastructure, services and laws, regulations and policies. In the urban food system, the government restricts the relevant actors involved in the urban food system through laws and regulations and supervises and guides the effective operation of the market through
government policies and administrative directives. Since the pandemic, government departments, as the main actors in market supervision and management, have played a key role in stabilizing and enhancing the resilience of urban food systems [40]. As one of the official political discourse carriers, policy documents have become a major feature of social governance in China. The main practical guidelines are conveyed to the local officials and grass-roots organizations via policy documents, expert opinions, and speeches of leaders and officials, forming a national policy discourse story line from the central to the local levels. If the central government’s discourse creation and re-creation do not take into account the interpretation of grassroots actors, the discourse alliance is hard to be formed, and the effect of policy implementation will be unsatisfactory.

The government authorities of China’s food industry are the State Administration for Market Regulation, the Ministry of Commerce and the agencies of commerce at all levels. In order to promote food safety and sustainable development, the new Food Safety Law in 2009 effectively implemented and replaced the original Food Sanitation Law. In April 2015, the Standing Committee of the National People’s Congress passed the newly revised Food Safety Law of the People’s Republic of China, which has been continuously revised with the development of the market. In addition, China’s Ministry of Agriculture and Rural Affairs, National Development and Reform Commission, Ministry of Finance, State Forestry and Grassland Administration, Ministry of Public Security and other departments play a collaborative role in maintaining the urban food system the stability of supply and demand of food in the domestic market.

China has implemented stringent measures to contain the COVID-19 virus and its outbreak in China mainly during the early of 2020 and most policies related to COVID-19 and food were issued by 2021. From January 2020 to June 2020, China’s main agricultural and food regulatory departments issued as many as 11 policies and notices related to the governance of urban food systems (Table 1).

Table 1. Policies and important measures of the central government in China during the COVID-19 (updated to June 2020).

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<thead>
<tr>
<th>Date</th>
<th>Department</th>
<th>Title of the Notice</th>
<th>Main Contents (Discourses and Actions)</th>
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<tr>
<td>21 January 2020</td>
<td>State Administration for Market Regulation, Ministry of Agriculture and Rural Affairs, State Forestry and Grassland Administration</td>
<td>Urgent notice on strengthening the supervision of wildlife markets and actively doing a good job in epidemic prevention and control</td>
<td>Strengthen the supervision of key places in key links, strengthen the rectification of various types of wildlife business sites such as agricultural (bazaar) markets, supermarkets, and restaurants, strengthen popular science publicity, and advocate healthy diets</td>
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<td>30 January 2020</td>
<td>General Office of the Ministry of Agriculture and Rural Affairs, General Office of the Ministry of Transport, General Office of the Ministry of Public Security</td>
<td>Urgent notice on ensuring the normal circulation of “vegetable basket” products and agricultural production materials</td>
<td>Strictly implement policies such as the “green channel” system and ensure the normal circulation order of “vegetable basket” products and agricultural production materials</td>
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<td>4 February 2020</td>
<td>General Office of the Ministry of Agriculture and Rural Affairs</td>
<td>Urgent notice on maintaining the normal production and marketing order of animal husbandry and ensuring the supply of meat, eggs, and milk markets</td>
<td>Ensure the supply of vegetables, meat, eggs, milk, grain and other daily necessities, implement the “vegetable basket” mayor responsibility system, actively organize the production of vegetables and other side foods, and strengthen material allocation and market supply</td>
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<td>13 February 2020</td>
<td>Ministry of Agriculture and Rural Affairs of the People’s Republic of China</td>
<td>Ministry of Agriculture and Rural Affairs of the People’s Republic of China Announcement No. 270</td>
<td>Ensure the orderly and smooth implementation of assessment of agricultural product quality and safety testing institutions and product quality supervision inspection and testing institutions of the Ministry of Agriculture and Rural Affairs (hereinafter referred to as “ministerial quality inspection institutions’)s review and accreditation work: extend the validity period of certificates, suspend on-site assessments, and strengthen online services during the prevention and control of the epidemic</td>
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<td>15 February 2020</td>
<td>General Office of the Ministry of Agriculture and Rural Affairs, General Office of the National Development and Reform Commission, and General Office of the Ministry of Transport</td>
<td>Urgent notice on solving the current practical difficulties and accelerating the resumption of work and production of the aquaculture industry</td>
<td>Accelerate the resumption of work and production of feed enterprises and livestock and poultry slaughtering and processing enterprises, ensure the smooth transportation of materials and products, promote the relief of the current breeding industry, and promote the connection between the production and marketing of livestock and poultry aquatic products</td>
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<td>28 February 2020</td>
<td>State Administration for Market Regulation, Development and Reform Commission, Ministry of Finance, Ministry of Human Resources and Social Security, Ministry of Commerce, People’s Bank of China</td>
<td>Guidance on responding to the impact of the epidemic and increasing support for individual industrial and commercial enterprises</td>
<td>Help individual industrial and commercial enterprises resume work and production in an orderly manner as soon as possible, reduce operating costs, facilitate market entry, and increase service efforts</td>
</tr>
<tr>
<td>12 March 2020</td>
<td>General Office of the Ministry of Agriculture and Rural Affairs</td>
<td>Notice on further optimizing approval services to accelerate the resumption of work and production of agricultural enterprises</td>
<td>Simplify approval procedures, optimize work processes, compress approval time, improve approval efficiency, promote online affairs, innovate service methods, strengthen approval supervision, and safeguard the rights and interests of enterprises</td>
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<td>16 April 2020</td>
<td>Ministry of Agriculture and Rural Affairs</td>
<td>Implementation opinions on accelerating the construction of cold chain facilities for the storage and preservation of agricultural products</td>
<td>Support new agricultural management entities to build cold chain facilities for storage and preservation, and accelerate the solution of the problem of the “first kilometer” of agricultural products leaving the village and entering the city from the source</td>
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<td>6 May 2020</td>
<td>General Office of the Ministry of Agriculture and Rural Affairs</td>
<td>Notice on carrying the pilot work of the “internet+” agricultural products out of the village and into the city</td>
<td>Give play to the role of “internet+” in promoting efficient coordination and industrialized operation of agricultural product production, processing, storage, transportation and sales, establish and improve the supply chain system, operation service system and support guarantee system suitable for the online sales of agricultural products, achieve the smooth connection between the production and marketing, high quality and competitive prices of high-quality characteristic agricultural products, and significantly improve supply capacity and supply efficiency</td>
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Table 1. Cont.

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<tr>
<td>8 June 2020</td>
<td>Ministry of Agriculture and Rural Affairs</td>
<td>Notice on further strengthening animal quarantine work</td>
<td>In accordance with the Catalogue of Livestock and Poultry Genetic Resources, clarify the scope of quarantine, standardize animal quarantine work, and actively do a good job in training and publicizing new requirements for animal quarantine</td>
</tr>
<tr>
<td>10 June 2020</td>
<td>General Office of the State Administration for Market Regulation and General Office of the Ministry of Education</td>
<td>Notice on strengthening the prevention and control of foodborne diseases in summer schools</td>
<td>Catering units strictly follow the Food Safety Law and its implementation regulations, as well as the Regulations on School Food Safety and Nutrition and Health Management, strictly implement the relevant regulations on the prevention and control of the coronavirus pandemic, and strictly implement the “Food Service Food Safety Operation Specifications”, etc.</td>
</tr>
</tbody>
</table>

In early January 2020, a cluster outbreak broke out in Wuhan’s Huanan Seafood Market, and the label “eating wild animals causes the coronavirus infection” triggered public attention to the management and consumption of wild animals. On 21 January 2020, the State Administration for Market Regulation, the Ministry of Agriculture and Rural Affairs and the State Forestry and Grassland Administration jointly issued the “Urgent Notice on Strengthening the Supervision of the Wild Animal Market and Actively Doing a Good Job in Epidemic Prevention and Control”, proposing policies and guidance plans to implement lockdown, control and quarantine of wild animal breeding sites, prohibit wildlife transhipment and trafficking, implement joint inspection of key places such as agriculture wet markets, supermarkets, restaurants, and wild animals-related websites to crack down on illegal trade of wild animals, strengthen publicity and communication of food science and food risks, and advocate for a healthy diet.

In early June 2020, a cluster of epidemics occurred in Beijing, and the Ministry of Agriculture and Rural Affairs issued the Notice on Further Strengthening Animal Quarantine Work. Affected by multiple isolation measures (such as village lockdown, city lockdown, stay-at-home policy, and road disruption), the supply and transportation of vegetables, meat, eggs, milk, grain and other daily necessities to cities have been negatively affected and caused a serious shortage of supply of fresh agricultural products in cities. The General Office of the Ministry of Agriculture and Rural Affairs issued the “Urgent Notice on Ensuring the Normal Circulation Order of “Vegetable Basket” Products and Agricultural Production Materials”, “Urgent Notice on Maintaining the Normal Production and Marketing Order of Animal Husbandry and Ensuring the Supply of Meat, Eggs, and Milk” and “Urgent Notice on Solving Current Practical Difficulties and Accelerating the Resumption of Operation and Production of the Breeding Industry”. These notices require the smooth implementation of the “vegetable basket mayor responsibility system” and support production and processing enterprises such as slaughtering, breeding of livestock and poultry, factories to produce animal product processing and packaging materials to resume work as soon as possible, strictly prohibiting the lockdown of villages, cutting off roads and stopping vehicles for food, to ensure the smooth transportation of fresh agricultural products. The notices strengthened the monitoring of price changes and market supply and demand of agricultural products and actively coordinate production areas and sales areas to build a stable production-sale relationship. Affected by the COVID-19, the production of most agricultural inputs, breeding and agricultural leading enterprises in China has suspended and spring ploughing and farming were affected. To accelerate the resumption of operation and production of agricultural enterprises, the General Office of the Ministry of Agriculture and Rural Affairs issued the Notice on Further Optimizing
Approval Services to Promote the Resumption of Operation and Production of Agricultural Enterprises, simplifying the approval process and opened up online procedures. With the gradual control of the spread of COVID-19 in various places, the resumption of schools and enterprises started. To mitigate the impact of the COVID-19 on small-and medium-sized companies, especially the catering and fresh products retail sectors, the State Administration for Market Regulation and other six departments issued “Guiding Opinions on Responding to the Impact of the Epidemic and Increasing Support for Individual Enterprises”, targeting food-related small- and medium-sized enterprises, and issued the orderly relaxing of the prohibition on the resumption of work of businesses engaged in wholesale, retail and catering, etc., to promote the resumption of work and production in the express delivery industry, and provide online and offline businesses, especially fresh food operators, with services to provide supply and demand information and resource. For self-employed individuals selling agricultural products, policies were issued to expand the venue and time of their activities, and exempt them from registration and other relevant policies in accordance with the law. On 10 June 2020, the General Office of the State Administration for Market Regulation and the General Office of the Ministry of Education jointly issued the Notice on Strengthening the Prevention and Control of Foodborne Diseases in Summer Schools, urging schools and off-campus feeding units to ensure food safety after school reopening.

After the outbreak of COVID-19 in China, the State Council established a joint prevention and control of COVID-19 mechanism (hereinafter referred to as “joint prevention and control”) on 21 January 2020. Dozens of policy notices have been issued by the Mechanism. The “Notice of the State Council Joint Prevention and Control Mechanism for Responding to the Novel Coronavirus Epidemic on Compacting the “Vegetable Basket” Mayor Responsible for Ensuring the Stable Production and Supply of Agricultural Products” issued on 13 February 2020, particularly emphasizes strengthening the production of “vegetable basket” products, ensuring smooth road transportation, and promoting the circulation and sales of agricultural products, strengthening the grid-style management of live poultry trading markets, accelerating the resumption of production of upstream and downstream enterprises in the breeding industry, and strengthening departmental coordination. At the same time, the working group of the Ministry of Agriculture and Rural Affairs carried out overall production scheduling, promoted production technical services, matched production with the market, and solved problems in the food supply chain through multi-channel and multi-level coordination.

These policies and notices from central government set up a top-level discourse and fostered a positive public opinion and actions, thus producing knowledge, defuse the pressure of negative public opinion and boosting actions of other actors in urban food systems as guidelines and standards.

4.2.2. Responses of Import and Export Market

A country’s urban food system not only closely links to the development of the local agriculture and food systems, but also to the regional and global agricultural and food systems. Agriculture and food trade, as an important part of the global value chain, also shapes a country’s urban food system [99,100]. As a major food importer, imported food account for a significant proportion of China’s urban food system. In particular, seafood, fruits, dairy products and frozen meat occupy a large share of the Chinese import market. In China, imported agricultural products are inspected and quarantined by the General Administration of Customs of China before entering the Chinese market, and further market supervision is carried out by the State Administration for Market Regulation.

In the era of the COVID-19, imports of food products and aquatic products were affected by non-tariff measures such as sanitary and phytosanitary (SPS), technical barriers to trade (TBT) and export bans/export restrictions, anti-dumping and countervailing measures. As COVID-19 was heavily hit the world in 2020, most countries issued temporary trade restrictions in early 2020. As of 30 June 2020 according to WTO website information,
more than 16 countries and regions around the world have notified the WTO of food-related export restrictions to address domestic food security and safety, covering a wide range of agricultural products, exposing restrictions and uncertainties to global food systems. As the COVID-19 pandemic was controlled worldwide, most of these export bans was expired after August 2020. At the same time, affected by the cluster of epidemics in Xinfadi, Beijing, China has carried out stricter inspections and quarantine measures for imported frozen products. Positive samples of the COVID-19 virus were found in some foods and food packages, so a temporary import ban was adopted for the products of a number of foreign exporters by the Chinese governments. Some exporters took the initiative to suspend the export of frozen products to China until the inspection and quarantine requirements were met. Therefore, due to the protection of food security in exporting countries and the strict requirements of imported food for food safety in China, the proportion of imported food in cities of China was reduced, which has brought a certain degree of negative impact on the diversity and supply of China’s urban food systems.

4.2.3. Commercial Enterprises: Innovation, Resilience and Alliances

China’s internet companies have played a role as a stabilizer in the urban food system in the era of COVID-19. Affected by quarantine measures and the high risk of going out, most consumers chose to use online platforms to purchase fresh agricultural and food products, and used real-time logistics services to deliver them to their homes. The rigid demand for online shopping increased significantly. China’s mobile internet coverage is high, and online shopping system via mobile phones has been well developed. Since the outbreak of the COVID-19, new modes of retailing and marketing represented by “internet+” and e-commerce have developed rapidly, and various forms of innovation have further coordinated urban and rural, online and offline, traditional and new sales channels and resources of agricultural products. E-commerce platforms, takeaway platforms, logistics companies and other new online selling platforms have rich experience and resources in online sales and digital supply chain management, which have further promoted the development of the “household food procurement-distribution” mode, showing strong innovation capabilities and resilience. Their discourses forms story line regarding “poverty alleviation”, “helping peasants and farmers” and “mutual assistance in food supply and demand”, causes positive collective actions from businesses to costumers, and provides new ideas for the innovation and reform of China’s urban food system.

Innovative E-Commerce Platforms Connecting Urban and Rural Food Systems

E-commerce platforms have played a vital role in stabilizing the supply and demand of food in the era of COVID-19, and some new models that adapt to epidemic prevention and control measures have emerged. First, Tmall, JD.COM and other large e-commerce platforms have launched a special session with themes “helping farmers” through the direct sales model from “farms, pastures” to “consumers”, they have opened up the sales channels of rural agricultural products and enhanced the stability and timeliness of urban agricultural product supply. Secondly, fresh food e-commerce platforms such as Dingtone Grocery Shopping, Daily Fresh and Freshhema have leveraged their cold chain logistics advantages, and invested in and built a number of fresh pre-warehouses and urban sorting centers in the local communities of many cities. Catering e-commerce platforms represented by Ele.me and Meituan have launched “contactless delivery” services, using contactless equipment such as food pick-up cabinets for distribution, effectively alleviating the devastating impact of the COVID-19 on the catering industry. In addition, many merchants have established community group-purchase platforms through WeChat groups, realizing direct sales and distribution services between food suppliers such as farmers, agricultural cooperatives, supermarkets, farmers’ markets and communities and customers, and establishing a closed-loop mode of “order, payment, community centralized procurement, and community centralized distribution”.

Agriculture 2023, 13, 1681
Smart Logistics Network Connecting Urban and Rural Areas

With the help of e-commerce platforms, the urban food system has cleared the channels for the sale and promotion of products from rural areas to cities, while a strong, efficient and innovative network of logistics and distribution facilities effectively ensured the timeliness, intelligence and safety of agricultural product transportation and distribution. Therefore, in line with the rapid growth trend of online consumption, it is of great significance to use big data and artificial intelligence technology to accelerate the layout of intelligent distribution facilities network and logistics network infrastructure construction to build a sustainable and resilient urban food system. In the era of COVID-19, China’s digitalization and intelligent logistics system played a role as a booster for the effective operation of the urban food system and ensured the stable supply of products belonging to “urban vegetable baskets” with intelligent platforms, digital operations and smart operations.

In the era of COVID-19, logistics enterprises accelerated the deployment of national logistics networks and infrastructure to help in the transportation and distribution of food. Main actors for logistics took actions with one accord. Firstly, in response to the call of the Ministry of Agriculture and Rural Affairs, major e-commerce platform enterprises launched agricultural assistance activities, providing preferential loans and freight subsidies to agricultural product merchants to help sell unsalable agricultural products. Alibaba launched the “Love to Help Farmers” program, Cainiao and logistics partners opened a “green channel for the transportation of unsalable agricultural products”, and built a digital agricultural product supply and demand network that links urban and rural areas. Secondly, the special line for agricultural products directly reaches the destination, building an emergency supply chain for agricultural products, ensuring the supply and price stability of the city’s “vegetable basket”. Cainiao, JD.com, SF and other logistics enterprises have expanded their market layout, optimized the national logistics network, and further deployed logistics infrastructure construction and warehousing for small cities, key counties and villages. At the same time, the construction and improvement of intelligent distribution and “contactless” terminal distribution infrastructure such as multi-regional smart express boxes and smart multi-functional lockers have been continuously accelerated, effectively ensuring the diversification, stability and convenience of urban food supply. In addition, the comprehensive solution of “instant logistics + other logistics services” has also played a prominent role. Modes such as “instant logistics + warehousing” and “instant logistics + express transportation” have facilitated the distribution, wholesale and delivery of agricultural products. For example, comprehensive solutions such as “SF cold chain + SF intra-city express delivery” have provided catering enterprises with “source-to-table” logistics services during the COVID-19.

Short Video Platforms Solving the Asymmetry of Urban and Rural Food Systems

In the era of COVID-19, the particularly prominent performance for sustaining and restoring the resilience of urban food systems is the wave of live broadcasts for selling goods. E-commerce and short video platforms provide live broadcasts, short videos and other resources to promote locally characteristic agricultural products. In the live broadcast or short video, selling anchors will introduce the characteristics of agricultural products on sale to the audience using verbal techniques and promotional discourses. Thanks to the active interaction and the popularity of the anchors, the dilemma that consumers in cities want to buy but do not have access to and producers in the rural areas want to sell but cannot find the channel due to information asymmetry and blocked marketing channels are effectively solved. Celebrities, farmers, well-known anchors, enterprises and even local government officials use online live broadcasts, short videos and other forms to promote the sales of agricultural products. The live broadcasts mixed with media publicity, festival displays and other activities could build and enhance brand image and product publicity channels, realize a direct sales mode from the place of origin to consumers and mitigate the negative impact of the COVID-19 on urban food systems. At the same time, industries, enterprises and farmers that produce and sell locally characteristic agricultural products, through new marketing and sales modes such as live broadcast interaction, can
better obtain market information and meet consumer demand, and further promote the features and branding of local agricultural products, so as to promote the local agricultural industry to the nationwide market and meet the high- and premium-level demand of urban residents for food and agricultural products.

Positive Public Opinion Guidance of Mainstream Media

Social media and public opinion have been a double-edged sword. They caused discourse distortion and coalition at the start of the pandemic and released asymmetry and unfiltered information that spread fear, debates, disputes and chaos rapidly. However, after the chaos at the beginning, the media, especially mainstream media, has played a crucial role in guiding public opinion for connecting the urban–rural dual food systems, and also promoting new food purchase and sales modes, spreading new information and fostering positive public opinion to the public more quickly, accurately and effectively, and forming positive social atmosphere in the society. On 6 April 2020, CCTV News joined hands with well-known anchors to carry out the first live broadcast of the “Thank You for Fighting for Hubei” public welfare live streaming selling of Hubei agricultural products, attracting 10.91 million viewers and selling Hubei goods with a total value of 40.14 million Chinese yuan. On 12 April 2020, the short video platform Kuaishou and CCTV News jointly launched a public welfare live broadcast selling activity, and the CCTV host connected with anchors, celebrities, mayors of cities and Kuaishou experts online, and sold Hubei products valued a total of 61 million Chinese yuan on the night of the live broadcast. Since April 2020, People’s Daily New Media has joined hands with Taobao, well-known anchors and celebrity guests to launch the “Order for Hubei” live broadcast activities to sell Hubei agricultural products to the whole country. On 9 July 2020, People’s Daily New Media once again joined hands with the well-known anchor with the aim of poverty alleviation by helping farmers, and promoting Shaanxi agricultural products. On 27 May 2020, two sessions discussed “e-commerce to help farmers” with well-known anchors and post-1990s representatives. In addition, the official Weibo accounts of mainstream media such as CCTV News and People’s Daily have repeatedly reported on activities to help farmers and educate farmers and peasants to use live broadcasts for selling foods and agricultural products.

In this story line, as shown in Table 2, actors of business enterprises initially form discourses in “poverty alleviation”, “helping peasants and farmers”, and “order for COVID-19 heavily hit areas and groups” following the policy discourses of “vegetable baskets” from the governments.

<table>
<thead>
<tr>
<th>Actors</th>
<th>Discourses</th>
<th>Actions</th>
<th>Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-commerce platforms</td>
<td>helping peasants, ensuring “vegetable baskets” security</td>
<td>Group buying, e-commerce, takeaway platforms, and fresh food e-commerce have undertaken the action to balance the demand from the urban consumers and sales-supply from rural producers</td>
<td>Connecting urban and rural food systems, solve the asymmetry between urban and rural production and marketing</td>
</tr>
<tr>
<td>Logistics companies</td>
<td>helping peasants, Smoothing supply–demand chain</td>
<td>extend logistics channels and improve infrastructure in the supply chain end</td>
<td>Connecting urban and rural logistics networks</td>
</tr>
<tr>
<td>Short video live-streaming platform</td>
<td>helping peasants</td>
<td>Live streaming to increase publicity of agro-food products and diversify marketing strategies</td>
<td>Solve the asymmetry between urban and rural production and marketing</td>
</tr>
<tr>
<td>Mainstream media promotion</td>
<td>poverty alleviation, order for COVID-19 heavily hit areas and groups</td>
<td>CCTV cooperates with well-known anchors, TV stations, mainstream media official Weibo accounts and other public platforms to launch “Helping Farmers” sales</td>
<td>Form a positive public opinion of “helping farmers” and live streaming goods</td>
</tr>
</tbody>
</table>
4.2.4. Industry Associations

The most prominent dilemma in the food system during the pandemic is the asymmetry of production and selling, that is, the difficulties for agricultural products in rural areas to sell and the shortage of food in both varieties and supplies in urban areas. The Ministry of Agriculture and Rural Affairs called on many industry associations and enterprises to make action for balancing the production and sales of foods. On 17 February 2020, the China Association for the Development of High-quality Agricultural Products and a number of food-related institutions established a joint mechanism for linking the production and sales services of national agricultural products, in order to smooth the information circulation channel of marketing for agricultural products, sell agricultural products in poverty-stricken areas, give cash rewards to supplement online sales of agricultural products, and build “big data for agricultural product production and marketing docking”. Six main measures were implemented, including “internet+” for agricultural products going out from villages into cities. The China Agricultural Products Market Association launched the Anti-epidemic Agricultural Production and Marketing Docking Public Service Platform on the China Agricultural Products Marketing and Branding Network and the WeChat public account of the China Agricultural Products Market Association, and carried out the collection of information on the difficulty of selling. The online sales platform of agri-food products in poverty-stricken areas, supported by the Ministry of Finance, the State Council Poverty Alleviation Office and the All-China Supply and Marketing Cooperative, also played a role in assisting the sale of agricultural products, alleviating the economic losses of poor families and ensuring the balance of supply and demand of food.

In addition, many food enterprises suspended operation and production, urban food supply, food service and food diversity all declined significantly, and the catering industry was severely affected. On 29 January 2020, the State Administration for Market Regulation launched a series of actions and activities to “guarantee price, quality and supply”. On 15 February 2020, the China Cuisine Association issued the Notice on the Orderly Resumption of Operations and Business of the Industry and the Guide to the Resumption of Functioning of Catering Services during the COVID-19 Pandemic to catering enterprises participating in the “Three Guarantees” action, suggesting that the resumption of businesses of catering services should be diversified and developed. In addition, the China Federation of Commerce, the China Cuisine Association, the China Hotel Association, the National Restaurant Hotel Rating Committee, and the Meituan Dianping Group jointly formulated the “Guidelines for Prevention and Control Services in the Catering Industry during the COVID-19 Pandemic (Provisional)”, which made detailed industry self-discipline guidelines in terms of service provision, procurement and purchase management, and takeaway services. On 30 January 2020, the China Dairy Industry Association issued the Notice on Implementing the State Administration for Market Regulation “Guarantee Price, Quality and Supply” to ensure the supply of dairy products in the market. The China Food Industry Association issued a proposal to the food industry and enterprises, “Together in the Boat, One Heart—China Food Industry Association Proposal”, to advocate that enterprises should do everything possible to adhere to food production, ensure market supply, and stabilize food prices.

4.2.5. Community Actors: Pluralism, Interaction and Collective Action

Communities in cities are faced with problems such as high population density, intense mobility of people, confined and concentrated food markets, and high requirements for food, so the resilience of the urban food system has undergone multiple tests in the era of COVID-19. Local communities play a key role in ensuring the sustainability and resilience of urban food systems. Relevant actors in the community have formed a key force in the governance of urban food systems through grass-root down-to-up discourse coalition, collective action and interaction, highlighting the ability of grassroots governance such as community mobilization capacity and residents’ self-driven participation in the crisis.
The interaction and collective action of urban food consumers represented by community residents, food system governors represented by management and service personnel of communities, and stakeholders in the food services industry such as supermarkets, distributors and retailers in the community have collectively made the urban food system restore quickly from initial chaos and shocks caused by COVID-19 and function well, and also provide a reference for multi-level and multi-actor community governance.

Actors in the community mainly include consumers, community management service providers and community food suppliers. Their discourse coalition, collective action and interaction during the pandemic have effectively strengthened the resilience and sustainability of the urban food system under the shocks from the crisis and established a food system with community grid, multi-actor actions and governance.

Residents, Consumers, Volunteers and Food Providers in the Community

Affected by the home guarantee policy and the social distancing policies of “less going out”, “less gathering” and even “no gathering” spontaneously formed by domestic residents, the nationwide consumption structure has exhibited a trend of accelerated fragmentation, which has also stimulated a new purchase and sales mode to some extent, that is, through self-organized community procurement methods via mini-programs on the phone, live broadcasts, and short videos. In urban food systems, the bottom-up innovative food procurement mode of “community group buying” via “WeChat group + mini program” for fresh food and daily necessities sales formed by community consumers is particularly prominent and is still popular in the post-pandemic era. This selling and purchase mode is rooted in the community with the vehicle of the WeChat community group buying mini program. The WeChat group owner organizes the community group purchase of vegetables, fruits, meat and other commodities, and contacts the delivery personnel, thus achieving a closed loop mode of order, payment and delivery. According to the interview with a group owner of a community group-buying Wechat group in J City of China, the basic process of community group buying is: Firstly, in a group-buying Wechat group of nearly 500 members, the group owner forwards sales information of vegetables, fruits, meat, daily necessities and other goods to the WeChat group members. Then, the group members place orders. Every day, the supplier exports the order lists from the group buying platform, and picks and packs the goods based on different pickup points. Then, the next morning, the supplier will send all the goods ordered the day before to the pickup point designated by group owners at 9 a.m., and the group owners will make a notification in the WeChat group or notify the residents to pick up the goods by phone call.

This kind of community group buying mode that roots deep into the community and sells products through social channels has formed a new residential food consumption mode. It fully integrates online and offline advantageous resources, and has a huge attraction for community residents thanks to its timeliness, convenience, socialization and stakeholder benefits. For community consumers, they can browse and purchase low-priced and high-quality goods without leaving home, communicate with the group owner and other consumers in real-time, place orders, pay, and pick up goods directly from the community, and even return or cancel unwanted orders unconditionally. Community group-buying platforms often have promotional activities, such as low-priced “flash deals”, group purchase reduction, and buy one get one for free, so that many “post-1960s”, “post-1970s” and even “post-1950s” middle-aged and elderly consumer groups who are consumers for traditional shopping mode could be attracted to use online shopping. The group owner themselves may be an ordinary resident in the community or the operator of a small shop in the community. They rely on the WeChat mini program platform to become the group owner, responsible for convening community residents, collecting procurement information and promoting the simple community food purchase mode. They can do business with zero cost, open up the community market without opening a store, get platform rebate payments according to the amount and quantity of community procurement, and can obtain quite good income during the epidemic. For the platform, this is a rare and free
promotion opportunity for national community group buying mode and a chance to enter the community market with no store, light assets and high return. The platform can obtain a large number of new active users at almost zero cost while achieving rapid growth in order volume and high user density in the region rapidly. So, the platform’s distribution cost is significantly reduced, and the distribution efficiency is significantly increased. For food suppliers around the community, especially wholesale markets, farmers and cooperative supermarkets, the demand for specific fresh products such as fruits, raw meat, rice, flour, grain, oil, eggs and milk has generally surged during the epidemic, showing a trend of variety shrinkage and a concentration increase in food demand.

Service and Management Personnel in the Community

Residential communities in most cities in China implemented a closed or semi-closed management mode in the era of the COVID-19 pandemic. With the appeal of community managers, the provisions of local government policies, the frequency of each household entering and leaving the residential areas every week became less, and the residents’ daily food procurement underwent a dramatic transformation. In order to overcome the difficulty for residents to buy vegetables, community management and service personnel took action both voluntarily and by administrative orders. They became the focal point for contacting vegetable service providers, cooperating with local supermarkets, farmers’ markets and vegetable farmers in the suburban areas, and at the same time established a community-based “WeChat group” to organize residents to buy daily fresh and groceries via WeChat groups. Community personnel and volunteers also improved service quality and provide door-to-door delivery services to vulnerable groups in the community, such as the lonely elderly, the disabled, infants and pregnant women with special food needs. In addition, many community service providers have also set up designated vegetable stalls within the community or cooperated with local supermarkets to send fresh vegetables and other foods into the community for residents in the community, so that residents can purchase daily food without leaving the community, thereafter greatly reducing the risk of residents’ cross-infection of COVID-19 virus, and ensuring the resilience of the community’s local food system.

Community management and service personnel gave full play to the depth and interactivity of grid grassroots governance and collected the needs of community residents in a timely manner and formulated solutions. Grassroots governance from information collection to solution development and then to action implementation was formed. As shown in Figure 2, in the fast-spreading and late stages of the epidemic in Wuhan, China, community services personnel took actions to stabilize food supply and demand of communities, other actors such as consumers and food suppliers in the community effectively took collective actions to form and implement grid governance of food systems in the local communities.

![Figure 2. Governance processes for community food systems.](image)

As shown in Table 3, the main actors in the community formulate another story line with their own discourses regarding food systems in face of COVID-19 developed
and discourses coalition for ensuring food safety and security in the community formed. Different actors in the community acted collectively with grassroots’ spontaneous self-governance to respond to crisis and challenges of food systems raised by COVID-19. In this case, it is found that if discourse alliance is formed within the discourse of actors at different levels of urban food systems, the implementation of policies will be easy and effective. Therefore, national and local policies should be better informed, taking into account diversity and locality in their downward promotion.

Table 3. Discourse, actions and effects of actors in the community.

<table>
<thead>
<tr>
<th>Actors</th>
<th>Discourses</th>
<th>Actions</th>
<th>Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumers: Community residents</td>
<td>Volunteer spirit, love and honor for sustain community food safety and security, help each other</td>
<td>Spontaneously organize group buying, volunteer service to vulnerable groups in the community, and have high acceptance and adaptability to new things and new lifestyles</td>
<td>Help community work and form a strong internal driving force for community governance</td>
</tr>
<tr>
<td>Food service providers: wholesalers, supermarkets, distributors, retailers, etc.</td>
<td>Ensuring quality, price stability and good services</td>
<td>Work closely with consumers, platforms and communities: establish group buying groups, integrate upstream and downstream resources, innovate sales models, etc.</td>
<td>Rapid and low-cost transformation to ensure supply, stabilize prices, and stabilize the city’s “vegetable basket”</td>
</tr>
<tr>
<td>Managers: community and neighborhood committee services and administrators</td>
<td>Stand fast and remain at the last line of fighting against the COVID-19, embrace responsibility with passion for community</td>
<td>Grid management and community services, and provision of community procurement services</td>
<td>Implement community grid management and services, and promote community collective action</td>
</tr>
</tbody>
</table>

5. Discussions

5.1. Discourses, Actions and Governance on Urban Food Systems

The analysis finds that discourses, actions and governance on urban food systems have been changing at different stages of COVID-19 in China and have been more of an emergency response to a short-lived problem, and much more fast paced [101].

The main findings are: (1) The urban food systems in China in the era of COVID-19 have formed a clear discourse chain from top central government to local communities, from state leaders to individuals of every community, although inconsistency appeared in the public opinions at some time. Under the guidance of the discourse of relevant actors in the central government, the financial funds and policy implementation have been guaranteed, which has become the necessary conditions for recovery and resilience of China’s urban food systems. On the one hand, the local governments and grassroots community actors have formed a set of governance discourse based on mutual help, community self-governance and knowledge regarding local food supply and demand through local food supply and demand and community management practice. On the other hand, as the progress and the updated containment measures of COVID-19 pandemic, they change their actions according to the changes in the discourse of the upper levels, so as to maximize the acquisition and utilization of the resources of the upper level and reduce the impact caused by the difference between discourse and practice. (2) In the early stage of COVID-19 in China, the discourse of actors above the community level has significant authority and could quickly form public cognition. It is a top-down discourse transmission path, and the discourse of low-level practitioners is somehow ignored, resulting in deviations between policy discourse and grassroots practice. The absence of community-level discourse and subsequent supporting actions makes the discourse of grassroots food producers, retailers and operators present a certain period of collective aphasia in the policy space. Later, the community-level actors skillfully combined the grass-roots discourse with the upper-level discourse, and formed a new discourse chain based on the traditional expression forms.
and interest demands of the grassroots, so as to integrate the grass-roots discourse with the upper-level discourse.

This study could contribute to the research field of urban food systems in several ways: (1) It systematically incorporates discourses and actions of different actors in the food systems into an integrated theoretical analysis framework of the governance paths to urban food systems in responses to crises in the era of COVID-19. (2) It connects the analysis of urban food systems governance from macro-level to meso- and micro-levels by analyzing different levels of actors from central government to industry association, to businesses, local communities and individuals to delve deeper into their actions and discourses through a theoretical framework.

5.2. Reflections on Urban Food Systems

The pandemic has highlighted the fragility and dependence of urban food systems during the crisis. The production is excluded in the traditional urban food system with the countryside undertaking this most basic link of the food system. There is a significant dual pattern of urban and rural food systems. However, a series of interventions and precautionary measures for the COVID-19 diseases, such as social distancing, travel restrictions, school suspension, and restrictions on economic and agriculture activities, have directly or indirectly affected urban–rural linkages with rural food systems and the resilience of the food systems, highlighting the urgent need for more sustainable food linkages in and around rural areas to support and strengthen urban food systems. Farmland and agricultural activities around cities provide food and ecosystem services such as vacation, recreation and visual comfort for the city and its inhabitants [102]. Food acts as a functional nexus, dissolving the urban–rural dichotomy and promoting sustainable planning at the regional level while enhancing climate resilience in urban areas. Peri-urban agriculture and the establishment of local food systems (e.g., direct marketing of agricultural products, farmers’ markets and community-supported agriculture) can shorten food supply chains at the local level [102,103]. Peri-urban areas have great potential to form urban food systems [104,105], but the main actors in this food system may not be urban dwellers. As a result, when a crisis comes up, the city’s food supply still requires long-distance transportation and delivery from rural areas, and urban food systems themselves lack resilience and are vulnerable to shocks that disrupt logistics, transportation and supply chains. Rebuilding food systems with increasing food production and distribution in urban areas can strengthen the resilience of urban food systems themselves to crises and climate change, and reduce dependence on food sources in distant and rural areas. It can also help build a stronger circular food economy, create new jobs, reduce hunger, improve food security, and improve the management of key natural resources such as soil, water, forests and oceans.

Building resilient urban food systems is the cornerstone of maintaining social prosperity and stability, relying on the joint efforts and multi-stakeholder participation of governments, enterprises, social organizations and other relevant actors in urban food systems. While the pandemic has exposed the fragility of urban food systems, it has also stimulated cohesion and innovation among different actors in responding to the crisis. Building on the efforts of different actors to overcome the crisis and building on more resilient rural-urban relations and regional integration can strengthen post-crisis recovery actions. The key to strengthening the resilience of urban food systems in the context of future urbanization is to have a central top-level design and government’s “top-down” design and plan of sustainable food systems through policies, laws, regulations, and projects that transcend the existing dilemma of urban–rural development and food system duality, while tilting towards sustainable urban food systems in terms of project funding, investment, and public-private partnerships (PPPs). At the same time, stimulate innovation in food policy making, food system innovation and food system building by local governments and the private sector, and empower local governments and the private sector to create a sustainable urban food system that delivers economic, social, environmental and health benefits.
6. Conclusions and Policy Implications

This research could shed light on policy designs for building a more sustainable and resilient urban food system that could adjust and adapt well in the post-COVID-19 era and also in the face of future challenges or even crises.

Firstly, in order to improve China’s urban food system and its capacity to respond to public health emergencies or crises, it is necessary to accelerate the formulation of long-term plans for the integration of China’s urban food supply system with international standards. The government should design policy for supporting cold chain packaging and chilled marketing of meat and aquatic products in large and medium-sized cities across the country, gradually cancelling direct trading of live poultry, live fish (aquatic products) and other live animals, and orderly closing urban live animal wholesale and retailing markets. It should speed up to integrate China’s poultry and fish slaughtering and processing industry, fresh packaging industry, cold chain logistics and transportation industry and supermarket cold chain storage via new technology such as using big data for traceability, the standardization of packaging and labelling, so as to form an urban poultry and fish meat food supply model of “centralized slaughter, safe packaging and standardized food labelling, cold chain distribution, chilled marketing”.

Secondly, it is necessary to establish a legal support system to provide legal protection for the benign management, sustainable development, production and consumer interests of innovative models of urban food systems such as urban agriculture and community-supported agriculture, urban agriculture, peri-urban agriculture to strengthen the city’s own food supply capacity, reduce information asymmetry between supply and demand, and enhance self-protection capacity and ecology of urban areas, especially metropolitan areas.

Thirdly, it would make urban food systems more resilient to future crises by optimizing the emergency response capacity and enhance the intelligence of food supply chains. The government, the financial industry and the food industry should work together to provide timely support in insurance, subsidies and policies to improve the ability of food enterprises to respond to business interruptions and develop business continuity plans. It would be promising to use big data and electronic information platforms, establish a hierarchical food supply system with the community as the most basic unit, and form an information-sharing network mechanism of community-town-city-regional-national graded food supply and demand relationship to facilitate information communication and emergency response. Moreover, collective actions with community governance and an innovative food business model to digitize flows and easily adapt to shocks in food systems are required.

Fourthly, the government should invest more in critical materials, technology, labor and infrastructure of food such as increasing investment in large and small food-grade trucks and loading and unloading trucks, upgrading agricultural product infrastructure, strengthening the coordination and support of all aspects of logistics and distribution services, strengthening the training of logistics practitioners, community property personnel and volunteers in logistics management ability and food safety awareness, and popularizing cashless and contactless payment modes, etc. It is also necessary to optimize the existing urban food supply system through urban–rural cooperation, big data, internet platforms, etc., and strengthen support for cooperation models such as food distribution centers—communities and community collective food procurement plans.

Note that governing urban food systems is complex and a fascinating niche for not only its relevant actors but researchers, a few limitations and directions for future research should be addressed. Firstly, consumers of different background and social-economic characteristics are important actors in urban food systems, our study focuses on the discourse and actions of different actors and their social coercion, yet a deeper study specifically on consumers’ perception, discourse narratives, opinion, attitudes and actions towards urban food systems and its governance is necessary. Secondly, although we employed a discourse analysis yet the discursive structures and power relations of different actors are not addressed systematically. A study on the discursive structures and power relations
though practice in governing urban food systems with knowledge and production will be a promising direction for further understanding urban food systems. Thirdly, our study mainly focused on the discourses and actions in the era of COVID-19; however, considering the COVID-19 is an unprecedented and influential crisis, a comparative study on the discourses and actions of different actors in urban food systems before, during and after COVID-19 pandemic is important to figure out the changes and future development directions for urban food systems.

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