



cogitatio

URBAN PLANNING

Perspectives on Food in the Sustainable City

Volume 10

2025

Edited by Birgit Hoinle, Alena Birnbaum,
and Petra Lütke

Open Access Journal

ISSN: 2183-7635



Urban Planning, 2025, Volume 10
Perspectives on Food in the Sustainable City

Published by Cogitatio Press
Rua Fialho de Almeida 14, 2º Esq.,
1070-129 Lisbon
Portugal

Design by Typografia®
<http://www.typografia.pt/en/>

Cover image: © Birgit Hoinle

Academic Editors
Birgit Hoinle (University of Hohenheim)
Alena Birnbaum (University of Kassel)
Petra Lütke (University of Münster)

Available online at: www.cogitatiopress.com/urbanplanning

This issue is licensed under a Creative Commons Attribution 4.0 International License (CC BY). Articles may be reproduced provided that credit is given to the original and *Urban Planning* is acknowledged as the original venue of publication.

Table of Contents

Perspectives on Food in the Sustainable City

Birgit Hoinle, Alena Birnbaum, and Petra Lütke

How Democratic Is Just Enough? Critical Reflections on the Transformative Potential of the Berlin Food Policy Council

Lea Loretta Zentgraf

A Switch to Commons: The Evolution of the Regulation of Urban Agriculture in Rome, Italy

Micol Sonnino and Simona Zollet

From Policy to Practice: Tracing the Evolution of Urban Food Policies Across London and Rotterdam

Agnese Cretella

Shaping Equitable Access to Food: Barcelona's Supply Planning and Policies in Perspective

Eulàlia Gómez-Escoda

Reclaiming Food Insecurity in European Urban Policies: Lessons From Public and Community-Based Initiatives

María José LaRota-Aguilera and Ana Moragues-Faus

Just Food for Kids? School Food Management Models and Sustainable Procurement in France and Germany

Birgit Hoinle and Jocelyn Parot

Levers for Sustainable Food System Transformation: How to Foster Biodiversity and Organic and Local Food Through Public Catering

Clara Bückart-Neufeld, Franziska Bürker, and Birgit Hoinle

Community Food Systems Report Cards as Tools for Advancing Food Sovereignty in City-Regions

Charles Z. Levkoe, Mary Anne Martin, Karen Kerk, and Francesca Hannan

Rethinking Urban Food Systems in Nairobi: Embracing Local Context for Sustainable Transformation

Linda Hering and Alexander Kohrs

"They Will Make It Center": Navigating Food Gentrification in Amsterdam's Javastraat

Maximilian Schrobenauser and Petra Lütke

Strategic Spatial Opportunities for Local Food Distribution: Urban Accessibility of Community Gardens in Christchurch, Aotearoa New Zealand

Andreas Wesener, Shannon Davis, and Guanyu Chen

Table of Contents

Community-Supported Agriculture in Brazil: Co-Responsibility in Agroecological Production to Strengthen Food Security

Rita de Cássia Lisboa Ribeiro, Cecilia Rocha, and Andhressa Fagundes

Consumers' Willingness to Pay for Organic Foods in Tehran: A Mixed-Methods Study

Arezou Babajani, Senour Ahmadi, Christine Wieck, Azad Ahmadi, and Mohammad Babajani

Food-Sharing Apps' Role in Mitigating Food Waste: Examples From Poland and Czechia

Daniel Štraub, Magdalena Kubal-Czerwińska, and Filip Bolicki

Perspectives on Food in the Sustainable City

Birgit Hoinle ¹, Alena Birnbaum ², and Petra Lütke ³

¹ Department of Societal Transition & Agriculture, University of Hohenheim, Germany

² Department of Landscape Planning and Communication, University of Kassel, Germany

³ Department of Geography, University of Münster, Germany

Correspondence: Birgit Hoinle (birgit.hoinle@uni-hohenheim.de)

Submitted: 9 July 2025 **Published:** 28 August 2025

Issue: This editorial is part of the issue “Perspectives on Food in the Sustainable City” edited by Birgit Hoinle (University of Hohenheim), Alena Birnbaum (University of Kassel), and Petra Lütke (University of Münster), fully open access at <https://doi.org/10.17645/up.i395>

Abstract

This thematic issue explores the importance of food geographies in understanding and shaping sustainable food systems in urban contexts. As cities strive to achieve sustainability goals, the importance of food as a critical urban system has become increasingly recognized. The contributions in this issue highlight the need for intersectional and interdisciplinary approaches to address issues of food justice, equality, and sustainability in urban areas. The Covid-19 pandemic, trade wars, and climate change have exacerbated existing inequalities in food access, underlining the urgency of rethinking and redesigning urban food systems. This issue brings together diverse perspectives from across disciplines and regions to critically assess theoretical frameworks and methodological approaches in food geographies, and to explore new avenues for innovation and collaboration. By examining the complex intersections of food, space, governance, and practice, this thematic issue illuminates potential pathways towards more just, equitable, and sustainable food futures for all. It also highlights the role of cities as key sites for transformative change in the pursuit of socio-ecological and socio-economical transitions.

Keywords

food geographies; food justice; intersectionality; Sustainable Development Goals; sustainable transitions; urban governance

1. Navigating the Complexities of Food Systems in the Sustainable City

In recent years, the issue of food has emerged as a crucial aspect of urban planning and development, highlighting the intricate relationships between food production, distribution, preparation, and consumption in the pursuit of sustainability transitions. The growing recognition of food as a “significant urban system”

(Pothukuchi & Kaufman, 1999, p. 217) in shaping urban environments has sparked a surge of interest in the field of food geographies, which provides a critical lens through which to examine the complex social, economic, and ecological dynamics of food in urban contexts. In addition, they enable an examination of the spatial dimension of sustainability transitions in the food context, which is often only implicitly addressed (Levin-Keitel et al., 2018). As cities worldwide strive to achieve sustainability goals, there is an increasing urgency for a comprehensive rethinking and redesigning of urban food systems. Thus, over the years initiatives such as alternative food networks (AFN), diverse forms of civic regulatory assemblages and urban food strategies, can be found (Maye, 2020).

The signing of the Milan Urban Food Policy Pact in 2015 marked a significant milestone in recognizing the critical role of food in urban sustainability transitions, with over 200 cities committing to prioritizing food as a key component of their urban agendas. This shift towards urban-focused food policies presents opportunities for transformative change, for example in the realm of public catering and civic engagement. Initiatives such as food policy councils and community-led projects are pushing for more inclusive and participatory approaches to food governance, seeking to address long-standing issues of food injustice and inequality.

This thematic issue aims to contribute to the ongoing discussion about the significance of food geographies in understanding and shaping sustainable food systems in urban contexts. By bringing together diverse perspectives from across disciplines and different regions, we seek to critically assess theoretical frameworks and methodological approaches that underpin the field of food geographies, while also exploring new avenues for interdisciplinary collaboration and innovation.

2. Exploring the Diversity of Food Systems in the Sustainable City

This thematic issue presents a diverse collection of manuscripts that showcase the breadth and depth of research in food geographies. The articles, written by scholars from various disciplinary backgrounds, offer a rich tapestry of perspectives on the complex relationships between food, space, and society. From empirical case studies to theoretical reflections, these contributions demonstrate the vibrancy and relevance of food geographies as a field of inquiry with a diversity of methods.

The manuscripts in this issue are organized around several key themes: policies of urban food governance, processes of sustainable food system transitions, and practices of AFN. Also, the geographies of food insecurity and the cultural significance of food in urban contexts play a major role. Together, they provide a nuanced understanding of the ways in which food shapes and is shaped by the social, economic, and environmental contexts of cities.

2.1. Policies—Cities as Places for Just Urban Food Governance

In recent years, the notion of food justice has become a relevant concept for many urban communities. The concept of food justice raises awareness of unequal and racialized power relations in the shaping of urban food systems (Garth & Reese, 2020). The Covid-19 pandemic, the Russian invasion of Ukraine, and the recent tendency towards trade wars have demonstrated the fragility of globalized value chains. Increasing prices for basic food, fruits, and vegetables particularly affect social groups with low income, migrants, and single-parent households. Food insecurity and food poverty are on the rise, including in countries of the

Global North (WBAE, 2023). At the same time, increasing numbers of children and adolescents have obesity and diet-related diseases (Kovacs et al., 2020). Equal access to healthy and fresh food is becoming a pressing policy issue on the urban agenda. In this regard, public procurement, such as school meal programs, is seen as a lever for transitioning to a sustainable and just food system (Filippini et al., 2018; Stein et al., 2022). Vivero-Pol et al. (2019) emphasize that food encompasses six main dimensions, amongst others: food as a human right, as a social-cultural determinant, as a public good, and food as a commodity. Within the dynamics of a corporate food regime, processes of industrialization and commercialization of agriculture have become evident, leading to a stronger tendency of the food as commodity dimension in recent decades (McMichael, 2005). In this sense, people have access to food only in their role as consumers through their purchasing power. By contrast, the dimension of food as a public good or food as a commons means that citizens gain decision-making power over the local food system and participate in decisions about the local food system. The democratization of the urban food system is on the agenda of food policy councils, a movement that goes back to struggles against food racism in North America in the 1990s. These initiatives have brought food to the center of urban policies and shown its interconnectedness with other urban policy fields, such as education, health, transportation, local economies, and environment. Enhancing spaces for democratic participation in the food system while pursuing sustainability goals can pose several challenges for food policy councils and for inclusive urban food governance (Michel et al., 2022). Many policy approaches are facing dilemmas between top-down oriented strategies with ambitious goals and bottom-up processes that design urban policies in co-creation with civil society.

The section on policies in this thematic issue provides novel insights into how urban policy actors address challenges in just and inclusive urban food governance. Authors discuss the tensions between institutionalization and civil society participation in the sense of food democracy. Zentgraf analyzes the Berlin Food Policy Council's work in raising awareness of intersectional food inequalities, while at the same time facing challenges to make the initiative more inclusive and diverse. The challenges of organizing urban food governance in an inclusive way are also the subject in the study in Rome by Sonnino and Zollet. They work with the concept of collaborative governance and urban commons to analyze the way urban agriculture has been promoted in urban food policies. They distinguish between a commons-oriented framework and neoliberal co-optation through different historical phases of urban planning. The notions of a more sustainability- and neoliberal-oriented urban food governance can be found in the text of urban food policy strategies. By applying the method of a critical discourse analysis, Cretella aims to identify the directions in which urban food policies are designed for the cases of London and Rotterdam. The issue of food justice is a major challenge for urban planning. This is shown in two case studies of Barcelona. In a historical analysis of planning documents, Gomez-Escoda shows the relevance of public market halls for providing access to fresh food in Barcelona. In the same context, we also learn about the essential role of food security initiatives in the Catalan metropolis where we see struggles for equal access to food for disadvantaged social groups. By mapping different food security initiatives (food banks, community kitchens...) La Rota-Aguilera and Moragues-Faus provide a typology of food security initiatives for the Global North and discuss the tensions between narrow and comprehensive, territorial approaches.

2.2. Processes—Cities as Part of Sustainable Transitions

Cities are relevant for sustainable transitions in all three—social, economic, and ecological—dimensions of sustainability. This means that the social foundation of urban development is as important as inclusive

economic performance within the Planetary Boundaries (e.g., biodiversity loss, climate change). The search for climate-neutral solutions in cities often focuses on the energy and transport sectors. However, the agri-food system is responsible for up to 30% of global greenhouse gas emissions (Crippa et al., 2021). To achieve just and sustainable urban futures within the Planetary Boundaries, it is essential to integrate food systems into climate policies, while also considering social justice aspects. In this context, cities have a double role in the pursuit of socio-ecological transitions. On the one hand, urban lifestyles have strong sustainability impacts on the surrounding environment in terms of waste, water pollution, and land degradation. Through globalized value chains, the effects of urban consumption in the Global North affect other parts of the world, for example, when considering the water footprint of different products. On the other hand, cities can be seen as think tanks and innovative spaces for creating sustainability initiatives. In many cities worldwide, experimental niches are emerging where new social innovations are developed by grassroots initiatives (Evans et al., 2021; Seyfang & Smith, 2007). AFN can be seen as such social innovations in the way that they experiment with new models based on solidarity economy and short food supply chains. According to the concept of the multi-level-perspective (Geels, 2019), when such niche actors gain enough social acceptance and support for their ideas, they can even influence the regime level and promote transitions within the socio-institutional system. Also, global dynamics at the landscape level (e.g., climate change, trade wars) can open up a window of opportunity or put pressure on the regime level to foster transitions at other levels (Geels, 2019). In sustainability literature, authors identify several leverage points as interventions that lead to transformative change (Abson et al., 2017). They distinguish between shallow leverage points and deep leverage points where deep leverage points have longer-term effects and lead to profound changes of the system, but are more difficult to implement. As an example, Abson et al. (2017, p. 33) refer to a change in the policy design or a shift in mindsets and values, such as orientation toward food security rather than rent-seeking in the agri-food system. This shows the challenges of bringing forward sustainable transitions in urban contexts at different levels. In this thematic issue we selected several contributions that analyze tools for promoting sustainable transitions in cities, and give insights into key dynamics, interventions, and actors.

In the section of processes, two articles discuss the role of public procurement as a lever for promoting sustainable food system transitions. Hoinle and Parot conducted a comparative analysis in France and Germany to identify different school food management models and their impact on promoting just sustainability transitions. They show how each model promotes outcomes regarding diversity, social accessibility, participation and education in school meals. Bückart-Neufeld et al. identified in their systematic literature analysis barriers and drivers for promoting biodiversity and organic food in public procurement through regional value chains. They apply the concept of leverage points to formulate policy recommendations for transitions to more biodiversity-oriented and sustainable public catering. What tools can support food system transitions? With an action research-based approach, Levkoe et al. analyze the role of Community Food System reports as a tool for socio-ecological transitions. With two case studies in Ontario, they showed the relevance of Report Cards for understanding the regional food system, involving the community and fostering transitions. Drawing on their fieldwork in Nairobi, Hering and Kohrs also emphasize the importance of considering the local context in transition processes, particularly with regard to the role of the informal sector in ensuring a sustainable urban food supply.

2.3. Practices—Cities as Experimental Spaces for Social Innovations

As noted above, cities provide fertile soil for creating sustainable transitions that experiment with visions of alternative food futures. Especially after the 2008 financial crisis, there has been a renewed interest in AFN based on solidarity economy (Rosol, 2024). One such example is community-supported agriculture (CSA), which seeks to connect rural farmers with urban consumers through short, trust-based food supply chains. Urban agriculture initiatives are flourishing in many cities of the Global North and South. They often transform vacant, abandoned spaces, rooftops, backyards, or even unused cemeteries (as in the case of Prinzessinnengärten Berlin) into oases of biodiversity and meeting places for the surrounding neighborhood (Baier et al., 2024). Some are even working as places of healing, knowledge sharing and empowerment for refugees and migrant communities. They work on alternative food futures in the sense of creating commons where space and resources are shared within a community. However, they are also threatened by tendencies of neoliberal city development to outsource community and welfare services into voluntary organizations (Kumnig et al., 2017). Other initiatives are committed to combat food waste by saving food that was already destined for the supermarket waste bin, as in the case of the food sharing movement. Also, we can observe a revival and refreshed interest in farmers' markets in the Global North, a format that experienced a decline during the "supermarket revolution" in the 1970s and 1980s (McMichael, 2005). Movements such as Slowfood (Hendriks & Lagendijk, 2022) question the related expansion of processed and convenience foods and seek to contribute to a revaluation of artisanal techniques, such as bread baking. Seed savers struggle against the commodification of seeds and emphasize the ancient knowledge of agrobiodiversity and the use of traditional varieties (Gutiérrez-Escobar, 2015). The fair-trade movement questions the ways in which global trade still operates within colonial power structures, while establishing direct market channels with small-scale farmer cooperatives in the Global South (Kister, 2013). All in all, we can see an increasingly diverse panorama of different alternative food initiatives. But what is "alternative" about them? What do they have in common? According to James (2016, p. 67), they are "intended to create a space outside of the neoliberal mainstream system through shortening the supply chain and connecting consumers to small-scale farmers." Rosol (2020) emphasizes that they are built on trust and personal interactions and are guided by normative ideals of more ecological, direct, and small-scale food production, distribution, and consumption, which differentiates them from conventional supply chains. She distinguishes between alternative products, alternative distribution networks, and alternative economic models (Rosol, 2020, p. 18). While "alternative products" are merely related to the product quality (e.g., organic certification), alternative "networks" and "economic models" experiment with non-capitalist economic practices. This includes other forms of economic transactions, working practices, and economic organization, which contribute to a diverse food economy (Gibson-Graham, 2008). But how can these alternative proposals emerge out of the niches? What are strategies for upscaling them to initiate transformations of the whole food system? These are essential questions for many of the AFN, as they often do not manage to include the social groups they originally wanted to address. Often, they are criticized for remaining in a middle-class, white bubble. But what are ways to make them more diverse and accessible? In the third section, we zoom in on diverse AFN in different parts of the world. The studies show how these initiatives deal with the dilemma of creating alternative food futures while struggling with gentrification and elitism.

The third section explores innovative practices for sustainable urban food systems, food justice, and inclusivity with regard to intersectional power dynamics related to class, race, gender, and age. The research of Schrobrenhauser and Lütke reveals how urban sustainability transitions can lead to gentrification and

displacement in migrant foodscapes. It illustrates how community members in Amsterdam's Javastraat adapt to and struggle with these changes. Two articles explore community-oriented food production through community gardens and CSA. A GIS analysis by Wesener et al. examines the spatial accessibility of community gardens in Christchurch, New Zealand, in relation to the local demographic context. Based on a literature review on CSA in Brazil, Ribeiro et al. found that, while CSA has the potential to promote food system transitions by reducing carbon emissions, it has limited accessibility to consumers with lower incomes. Organic production is a leverage point, but it can be more expensive due to labor-intensive cultivation methods that avoid synthetic pesticides and fertilizers. Babajani et al.'s study on customer willingness to pay for organically produced food in Tehran shows that trust in certification and labeling systems plays a crucial role, particularly in the absence of standardized systems. Finally, Štraub et al.'s research highlights the increasing importance and potential of digitalization in transition processes, using the example of food sharing apps that reduce food waste. The impact of these apps depends on the urban context and the type of food.

3. Conclusion

This thematic issue highlights the potential of food geographies to inform sustainability transition processes in urban contexts, focusing particularly on the interplay between spatial and social dimensions. A notable theme that has emerged from the contributions is the imperative need for intersectional and interdisciplinary approaches that prioritise justice and equity in urban sustainability transitions. As urban areas continue to grow and develop, it becomes apparent that the transition towards sustainable food systems is a complex, multifaceted, and iterative process (Evans et al., 2021). In order to address the forthcoming challenges, there is a requirement for innovative and experimental thinking, as well as a commitment to social justice, environmental responsibility, and human well-being. By synthesising insights from food geography and the collective expertise of academics, activists, and practitioners, we aim to help envision a future where food systems no longer perpetuate inequality and unsustainability, but instead contribute to a positive urban transformation.

Acknowledgments

We thank the Journal team for the opportunity to lead this thematic issue and for the fruitful cooperation. Our thanks also go to the reviewers of the contributions for their constructive feedback and to Haley Swanger for her dedication in revising the language and style of our text.

Conflict of Interests

The authors declare no conflict of interests.

References

- Abson, D., Fischer, J., Leventon, J., Newig, J., Schomerus, T., Vilsmaier, U., von Wehrden, H., Abernethy, P., Ives, C., Jager, N., & Lang, D. (2017). Leverage points for sustainable transformation. *Ambio*, 46, 30–39. <https://doi.10.1007/s13280-016-0800-y>
- Baier, A., Müller, C., & Werner, K. (2024). *Unterwegs in die Stadt der Zukunft. Urbane Gärten als Orte der Transformation*. Transkript.
- Crippa, M., Solazzo, E., Guizzardi, D., Monforti-Ferrario, F., Tubiello, F. N., & Leip, A. (2021). Food systems are responsible for a third of global anthropogenic GHG emissions. *Nature Food*, 2, 198–209.

- Evans, J., Vácha, T., Kok, H., & Watson, K. (2021). How cities learn: From experimentation to transformation. *Urban Planning*, 6(1), 171–182. <https://doi.org/10.17645/up.v6i1.3545>
- Filippini, R., De Noni, I., Corsi, S., Spigarolo, R., & Bocchi, S. (2018). Sustainable school food procurement: What factors do affect the increase of organic food? *Food Policy*, 76, 109–119.
- Garth, H., & Reese, A. (2020). *Black food matters: Racial justice in the wake of food justice*. University of Minnesota.
- Geels, F. W. (2019). Socio-technical transitions to sustainability: A review of criticisms and elaborations of the multi-level-perspective. *Environmental Sustainability*, 39, 187–201.
- Gibson-Graham, J. K. (2008). Diverse economies: Performative practices for 'other worlds.' *Progress in Human Geography*, 32(5), 613–632.
- Gutiérrez-Escobar, L. (2015). Soberanía alimentaria. La Red de Semillas Libres de Colombia. *[Con]textos*, 4(13), 11–24.
- Hendriks, B., & Legendijk, A. (2022). Slow food as one in many a semiotic network approach to the geographical development of a social movement. *Environment and Planning E: Nature and Space*, 5(1), 169–188. <https://doi.org/10.1177/2514848620970923>
- James, S. (2016). *Farming on the fringe. Peri-urban agriculture, cultural diversity and sustainability in Sydney*. Springer.
- Kister, J. (2013). Fair trade in Germany left the niche market. Power shifts observed in global fair trade value chains. *Revista Economia Agro-Alimentare*, 3, 35–54.
- Kovacs, V. A., Messing, S., Sandu, P., Nardone, P., Pizzi, E., Hassapidou, M., Brukalo, K., Tecklenburg, E., & Abu-Omar, K. (2020). Improving the food environment in kindergartens and schools: An overview of policies and policy opportunities in Europe. *Food Policy*, 96, 101849. <https://doi.org/10.1016/j.foodpol.2020.101848>
- Kumnig, S., Rosol, M., & Exner, A. (2017). *Umkämpftes Grün. Zwischen neoliberaler Stadtentwicklung und Stadtgestaltung von unten*. Transkript.
- Levin-Keitel, M., Mölders, T., Othengrafen, F., & Ibendorf, J. (2018). Sustainability transitions and the spatial interface: Developing conceptual perspectives. *Sustainability*, 10(6), 1880. <https://doi.org/10.3390/su10061880>
- Maye, D. (2020). Agri-food sustainability transitions. Food geographies, governance and ethical foodscapes. In A. Kratzer & J. Kister (Eds.), *Rural-urban linkages for sustainable development* (pp. 31–58). Routledge.
- McMichael, P. (2005). Global development and the corporate food regime. *Research in Rural Sociology and Development*, 11, 269–303.
- Michel, S., Wiek, A., Bloemertz, L., Bornemann, B., Granchamp, L., Villet, C., Gascón, L., Sipple, D., Blanke, N., Lindenmeier, J., & Gay-Para, M. (2022). Opportunities and challenges of food policy councils in pursuit of food system sustainability and food democracy—A comparative case study from the Upper-Rhine region. *Frontiers in Sustainable Food Systems*, 6, 916178. <https://doi.org/10.3389/fsufs.2022.916178>
- Pothukuchi, K., & Kaufman, J. L. (1999). Placing the food system on the urban agenda: The role of municipal institutions in food systems planning. *Agriculture and Human Value*, 16(2), 213–224.
- Rosol, M. (2020). On the significance of alternative economic practices: Reconceptualizing alterity in alternative food networks. *Economic Geography*, 96(1), 52–76.
- Rosol, M. (2024). Stadt und Ernährung. Aktuelle Ansätze in Forschung, Politik und Zivilgesellschaft. *Geographische Rundschau*, 11, 10–15.
- Seyfang, G., & Smith, A. (2007). Grassroots innovations for sustainable development: Towards a new research and policy agenda. *Environmental Politics*, 16(4), 584–603. <https://doi.org/10.1080/09644010701419121>

- Steffen, W., Richardson, K., Rockström, J., Cornell, S. E., Fetzer, I., Bennett, E. M., Biggs, R., Carpenter, S. R., De Vries, W., De Wit, C. A., Folke, C., Geerten, D., Heinke, J., Mace, G., Perron, L., Ramanathan, V., Ryers, B., & Sörlin, S. (2015). Planetary boundaries: Guiding human development on a changing planet. *Science*, 347(6223), 1259855.
- Stein, M., Hunter, D., Swensson, L., Schneider, S., & Tartanac, F. (2022). Public food procurement: A transformative instrument for sustainable food systems. *Sustainability*, 14, 6766. <https://doi.org/10.3390/su14116766>
- Vivero-Pol, J. L., Ferrando, T., De Schutter, O., & Mattei, U. (2019). *Routledge handbook of food as a commons*. Routledge.
- WBAE. (2023). *Food poverty under pandemic conditions*. https://www.bmel.de/SharedDocs/Downloads/EN/_Ministry/scientific-advisory-food-poverty-under-pandemic-conditions.pdf?__blob=publicationFile&v=2

About the Authors



Birgit Hoinle is postdoc researcher at the Department of Societal Transition & Agriculture at the University of Hohenheim, Germany. She holds a PhD in Geography from the University of Hamburg. Her current research focuses on food justice, urban food policies, and school food. She is an active member of the Food Policy Council Tübingen.



Alena Birnbaum is a research assistant at the Department of Landscape Planning and Communication at the University of Kassel. Her dissertation examines planning and development processes of suburban areas with a special focus on farmland. Using a post-structuralist discourse and subjectivation framework, she analyzes the case of farmers in the Stuttgart region.



Petra Lütke is a senior researcher in human geography at the Department of Geography at the University of Münster in Germany. She specialises in the intersection of urban geography, food geography, and spatial planning. Her recent research focuses on the implicit relationship between food practices and urban transformation in neoliberal contexts.

How Democratic Is Just Enough? Critical Reflections on the Transformative Potential of the Berlin Food Policy Council

Lea Loretta Zentgraf ^{1,2} 

¹ BMBF–Junior Research Group Food for Justice: Power, Politics and Food Inequalities in a Bioeconomy, Heidelberg University, Germany

² Institute of Sociology, Freie Universität Berlin, Germany

Correspondence: Lea Loretta Zentgraf (lea.zentgraf@fu-berlin.de)

Submitted: 30 October 2024 **Accepted:** 11 February 2025 **Published:** 14 May 2025

Issue: This article is part of the issue “Perspectives on Food in the Sustainable City” edited by Birgit Hoinle (University of Hohenheim), Alena Birnbaum (University of Kassel), and Petra Lütke (University of Münster), fully open access at <https://doi.org/10.17645/up.i395>

Abstract

In recent years, global social movements have increasingly challenged the corporate food regime, advocating for socio-ecological transformations in the agri-food system. This article questions whether food activists’ discourse and actions may potentially compel a democratic, participatory, and just transformation of food systems, overcoming intersectional food inequalities and embedded power relations. Based on a three-year empirical case study (2021–2024) of the Berlin Food Policy Council, this article evaluates whether food policy councils can serve as venues for democratic participation, critical whiteness, and just food politics in urban settings, with implications for broader debates on urban social mobilization and transformation in Germany and beyond. Through participant observation, document analysis, and semi-structured interviews, this research reveals that Berlin’s food policy council predominantly consists of white, German, middle-class, left-wing female activists, and is unrepresentative of the city’s population. However, a growing internal awareness of socio-economic and cultural biases suggests evolving efforts towards greater participation and diverse perspectives. Further, the findings show a recent shift of agenda: from a narrow environmental focus towards a socio-ecological just transformation, overcoming (at least partially) existing blind spots concerning class, race, and migration history. How and when this occurs is shown through concrete examples of collective actions and changes in discourse. Moreover, the analysis suggests that the Berlin Food Policy Council demonstrates transformative potential through its multiscale approach, engaging in collective action at various levels—from local neighborhoods to regional and transnational initiatives.

Keywords

alternative food networks; food democracy; food justice; food policy council; Germany

1. Introduction

Social movements have in recent years increasingly challenged the corporate food regime by advocating for a socio-ecological transformation of the agri-food system (Holt-Giménez & Shattuck, 2011; Motta, 2021a). Despite diverse food movements worldwide seeking alternatives and ecologically just, democratic food systems, many actors remain excluded from decision-making processes in food politics and practices (Cadieux & Slocum, 2015; Guthman, 2011; Slocum, 2007; Slocum et al., 2016). This struggle is addressed in claims for food democracy that refer to increasing participation, equity, and fairness (Hassanein, 2003). This perspective emphasizes the rights and responsibilities of all citizens to be active in shaping food policies and practices (Rosol & Béal, 2022; Sieveking, 2019). Its goal is a sustainable, fair, and accessible food system for all (Renting et al., 2012). Furthermore, food democracy is strongly interconnected with other food movements' claims such as food justice (Fladvad, 2018; Rosol, 2020; Rosol & Béal, 2022; Rosol et al., 2022).

One innovative social response to this struggle for food democracy is the emergence of food policy councils (FPCs). Originating in the US in the 1980s, FPCs have gained popularity in other parts of the world, such as the UK and Brazil (Doernberg et al., 2019). However, studies showed that, depending on their national and local food systems and governance, FPCs may vary significantly in organizational structure and aim (Grisa, 2021; Grisa & Zimmermann, 2015; Gupta et al., 2018; Harper et al., 2009; Schiff, 2007). Nevertheless, all FPCs are organized around food democracy and citizens' participation in food politics (Schiff et al., 2022). Bringing together academic findings and literature on FPCs in a 20-year scoping review, Schiff and colleagues describe some of the characteristics of most FPCs: collaborative, membership-driven organizations that convene stakeholders from a variety of sectors—public, private, community—with the objective of exploring integrated strategies for improving local and regional food systems (Schiff et al., 2022). Most FPCs operate at local/municipal levels. Depending on the context, food democracy is strongly interconnected with other concepts such as food justice, rights to food, community food security, and food sovereignty (Agarwal, 2014b; Candel, 2022; Fladvad, 2018; Rosol, 2020; Rosol & Béal, 2022; Rosol et al., 2022; Welsh & MacRae, 1998): “In the urban centers of the Global North, the concept of food justice or food democracy is increasingly being invoked instead of sovereignty” (Rosol & Strüver, 2018, p. 177).

There are currently already more than 45 FPCs in cities or regions in Germany, Austria, Italy, Switzerland, Luxembourg, and the Netherlands (see Figure 1), collectively organized under the banner of “Food democracy now!” (Netzwerk der Ernährungsräte, 2024). In Germany, FPCs began to appear in 2016 in cities like Berlin and Cologne, as grassroots movements pushing for democratic and sustainable urban food politics and planning (Birnbaum & Lütke, 2023; Rosol, 2015, 2018, 2023). Since 2016, the movement has gained momentum, and FPCs have been founded in cities and regions across Germany (Renting et al., 2012; Sieveking, 2019; Sieveking & Schomerus, 2020). In 2023 alone, 28 FPCs were registered officially as associations or collaboratives (Birnbaum & Lütke, 2023, p. 390), and around 10 were on track towards professionalization. This shows how much mobilization and transformation in this field is being driven by civil society in Germany (Netzwerk der Ernährungsräte, 2024).

FPCs in Germany have adopted a broad range of topics to encompass sustainability, health, and economic factors (Doernberg et al., 2019; Kropp & Stinner, 2018; Rosol, 2015; Stierand, 2014). The present research focuses on the Berlin Food Policy Council (BFPC), examining this alternative food network (AFN) and its transformative potential to promote just food democracy. The goal is, first, to articulate those “food

Many scholars have flagged the transformative potential of food movements (Fladvad, 2018, 2019; Holt-Giménez, 2011; Holt-Giménez & Shattuck, 2011; Holt-Giménez & Wang, 2011; Motta, 2021a; Motta & Martín, 2021), AFNs (DuPuis & Goodman, 2005; D. Goodman et al., 2012), and alternative food initiatives (Rosol, 2015, 2018, 2023). One argument holds that the transformative practices of such actors do not merely represent alternatives and structural change symbolically but also link concrete alternatives to the dominant capitalist and exploitative system of production, trade, and consumption (Kropp & Müller, 2018, p. 188).

2.1. AFNs and Urban Transformation

In this contested process of transformation, AFNs demand and initiate alternatives directly, thereby setting in train a transformation of the food system:

The so-called “alternative food networks,” which represent the crystallization points of a new movement, present themselves as locally embedded, participatory approaches to transformative economies. In this context, food practices and capabilities, food spaces and economies, as well as forms of production and consumption, are being redefined and reconfigured. (Kropp & Müller, 2018, p. 189)

AFN discourse and collective action bridge the urban and the rural; since cities have traditionally been marginal to agriculture and food politics, this constitutes a novel development. Deindustrialization, globalization, and the commodification of food historically contributed to the separation of urban populations and peri-urban or rural food production sites (Kropp & Müller, 2018): “Agriculture and food processing in the city and its surroundings have lost their relevance for urban development. Consequently, food and agriculture have become marginal issues in urban planning” (Doernberg et al., 2019, p. 1). Housing, infrastructure, and energy are likewise dominant in urban planning, whereas food has been peripheral and rarely understood as relevant for multiple overlapping aspects of life in a “just city” (Fainstein, 2014).

Cities have never been passive “consumers of food” but always sites of contestation, where cultural meaning has been imposed on “suppliers” (Kropp & Müller, 2018, p. 188). Urbanites engaged in food initiatives become political subjects and typically welcome their capacity as citizens to actively shape food politics; they reject the limited role of a passive consumer: “Cities are emerging as sites of education about agri-food systems—and the need to change them—of re-politicization and protest, and of envisioning and enacting alternatives” (Rosol, 2023, p. 77). A milestone in the gathering mobilization for alternative urban food politics was the October 2015 Milan Urban Food Policy Pact. More than 100 cities signed this international protocol aimed at tackling food-related issues at the urban level at the Expo Milan (Milan Urban Food Policy Pact, 2015). In collaboration with other international organizations and coalitions such as FAO (2024) or the C40 (2024) network, the Milan Urban Food Policy Pact became a touchstone for those cities seeking resilient, sustainable, and just food systems.

According to Motta (2021a, 2021b), despite the potential for transformation, however, several limitations persist when it comes to AFNs and alternative food initiatives. Scholars have criticized those practices and strategies emphasizing market-oriented solutions, and which are overly focused on individual consumers, thereby limiting structural change and preserving neoliberal and capitalist social–property relations (Alkon,

2014; Allen, 2008; D. Goodman et al., 2012; Harris, 2009; Mares & Alkon, 2011). Another limitation has been a romanticization of the local (DuPuis & Goodman, 2005; DuPuis et al., 2006; Fonte, 2013; Kilmer, 2012): many “label AFN localism ‘unreflexive’ and ‘defensive’...reproducing neoliberal forms and subjectivities” (Harris, 2009, p. 60). Consequently, several studies of the spatiality of AFNs adopt a multi-scalar framework and a relational perspective (de Carvalho et al., 2022; M. K. Goodman, 2016; Jarosz, 2000; Sarmiento, 2017; Winter, 2005) combining spatial categories (local, regional, national, global), communication spheres (digital, analog), urban–rural characteristics, and other categories of spatiality and the social: street, neighborhood, kitchen, and the like. In the German AFN debate, questions of re-localization, urban-rural bridges, and the potential for scaling up regional initiatives are now quite prominent (Bechmann, 2021; Roep & Wiskerke, 2012; Rosol, 2020; Vicente-Vicente et al., 2023; Zentgraf & Motta, 2024). Third, critical approaches call attention to the racial, class, and gender blindness of AFNs (Allen, 2010; Allen & Sachs, 2007, 2012; Guthman, 2008, 2011) and demand the incorporation of food justice more effectively in their agendas for a socio-ecological transformation. Research about AFNs in Germany has now sought to overcome such limitations, but when compared to research on North America (DuPuis et al., 2006; Guthman, 2008; Slocum, 2007) and South America (Conway & Paulos, 2020; Hoinle, 2020; Teixeira & Motta, 2022), it is still rudimentary.

2.2. FPCs and Their Transformative Potential and Limitations

FPCs are often described as AFNs (Cadieux & Slocum, 2015; Harper et al., 2009; Holt-Giménez & Shattuck, 2011), and, more recently, as alternative food initiatives (Rosol, 2018; Rosol & Strüver, 2018) or alternative food organizations (Schiller-Merkens & Machin, 2023), given their range of organizational structure. In the US, Canada, and Brazil—the first countries with FPCs—both structures and agendas differ significantly (Schiff et al., 2022): “The food councils of the first hour often emerged from informal coalitions in the areas of hunger reduction, sustainable agriculture, and community development” (Sieveking & Schomerus, 2020, p. 681). Research showed that FPCs adapt their strategies and actions to their local contexts and food systems (Gupta et al., 2018; Harper et al., 2009; Schiff, 2007). Consequently, the experiences with national, state, and local governance are quite diverse (Barbosa & Coca, 2022; Bassarab et al., 2019; Grisa, 2021; Grisa & Zimmermann, 2015; Recine, 2023; Scherb et al., 2012). In the 1990s and 2000s, the idea of food democracy and diverse actions of urban food policies through collaboration and strategic exchange among different stakeholders spread worldwide. FPC has become a general term for numerous initiatives united in their aim of improving food politics and practices through public policy (Schiff, 2007):

In general, they promote the idea that food system transformation cannot occur without support from institutional politics, which is why they try to achieve “hard law” regulatory changes in the form of sustainable food policies....With their multi-political approach to sustainability transformation—combining prefigurative, institutional and occasional involvement in contentious politics—FPCs can play a crucial role in the fundamental transformation of the food system. (Schiller-Merkens & Machin, 2023, p. 315)

Studies on FPCs may be categorized by lines of debate. Some see FPCs as an attempt to practice food democracy (Allen, 2010; Harper et al., 2009; Hassanein, 2003), others as initiatives in prefigurative politics (Schiller-Merkens & Machin, 2023) and food-related empowerment (Bornemann & Weiland, 2019; Sieveking, 2019); still others see FPCs as transformative actors for food justice (Cadieux & Slocum, 2015; Carlson &

Chappell, 2015). As with the aforementioned critique of the transformative potential of AFNs, some scholars problematize FPCs as too focused on a single issue (Harper et al., 2009; Rosol, 2023), lacking in diversity (Allen, 2010; D. Goodman et al., 2012), and restricted by location (DuPuis & Goodman, 2005). The present study follows Slocum (2007) and the feminist and decolonial food scholarship by adopting an intersectional analysis of the “progressive potential in the white spaces of alternative food (markets, conferences, ‘the local’ discourse) and in the interaction of bodies that constitute those spaces” (p. 9). Because most of those engaged in German FPCs are white, the movement exemplifies a “spatiality of whiteness in community food” (Slocum, 2007, p. 7) with its attendant exclusions and inequalities. Nevertheless, one may also see the “progressive potential and the fuzziness of race, visible in alternative food practices” as “a site of possibility” (Slocum, 2007, p. 7).

The number of studies on FPCs in Germany continues to grow. In 2023, Birnbaum and Lütke (2023) presented a first overview of the emerging FPCs in their work on food and governmentality in the green city. Sieveking and Schomerus (2020) have explored FPCs as instruments of food transition in Germany and Doernberg et al. (2019) have analyzed FPCs as key players in the food policies of Germany’s urban regions. Furthermore, several recent case studies have examined specific FPCs. These cover food democracy in Oldenburg (Sieveking, 2019); transformative economies in Berlin and Cologne (Rosol, 2015, 2018, 2023; Rosol & Strüver, 2018); food system sustainability in the Upper-Rhine Region (Michel et al., 2022); FPC history in Cologne (Thurn, 2020); and the general potential of urban community initiatives in Germany for addressing social and environmental justice (Rosol, 2023).

2.3. Food Democracy: From Participation to Co-Determination

Food movements have developed concepts like food democracy, food sovereignty, and food justice (Fladvad, 2018; Holt-Giménez & Shattuck, 2011; Motta & Martín, 2021; Rombach & Bitsch, 2015) that retain a local specificity even as they traverse international networks. Food-related discourses aid in the comprehension of local struggles by illuminating their transformative potential, the scales at which they can operate, and their ability to cross spatial and social boundaries (Motta, 2021a). Food democracy as a concept itself invokes increased participation, equity, and fairness across the food system. First introduced by Lang (1998, 2007), who posed the question of food policy in the 21st century, it can be “both radical and reasonable” (Lang, 1999):

In social terms, food democracy is a set of demands from below. Food democracy, as a force in food policy, is significant because for two centuries, since industrialization and the modern globalization experiment unfolded, there has been counterpressure to provide the means to eat adequately, affordably, safely, humanely, and in ways one considers civil and culturally appropriated. (Lang, 1999, p. 218)

Many scholars took the concept further, emphasizing the responsibilities of the citizenry to engage actively in shaping food policies (Berglund et al., 2021; Hassanein, 2008). Food democracy is strongly linked to knowledge exchange and the co-production of food (Hassanein, 2008; Kropp, 2018). Its transformative power derives from its direct challenge to capital; it is a “constructive method for political practice because participation is a key feature of democracy” (Hassanein, 2003, p. 78). In opposing the commodification of food, it transforms passive consumers into active, informed citizens (Welsh & MacRae, 1998):

At the core of food democracy is the idea that people can and should be actively participating in shaping the food system....In other words, food democracy is about citizens having the power to determine agro-food policies and practices locally, regionally, nationally, and globally. (Hassanein, 2003, p. 78)

This approach is central to FPCs. FPCs promise to unite diverse groups and individuals, including farmers, consumers, activists, and policymakers, under a common vision of an ecologically sound, just, and democratic food system. Compared to other AFNs, their focus is on transformation through political participation and the prefiguration of “alternative practices and values around food that are not yet realized at a broader scale” (Schiller-Merkens & Machin, 2023, p. 315). The two ideas of participation and co-determination of food politics (influencing policies and consequent practices) are at the core of academic literature on food democracy. A combination of Hassanein’s approach with more recent work on sustainability (Bornemann, 2022; Bornemann & Weiland, 2019), scale and justice (Davies et al., 2019; Pungas, 2023; Sieveking, 2019), and critical analysis of FPCs as AFNs is the analytical basis of this study.

3. Methodology

This study’s methodological approach follows critical discourse analysis (CDA) as defined by Van Dijk (2015, p. 466):

Critical discourse analysis (CDA) is discourse analytical research that primarily studies the way social-power abuse and inequality are enacted, reproduced, legitimated, and resisted by text and talk in the social and political context. With such dissident research, critical discourse analysts take an explicit position and thus want to understand, expose, and ultimately challenge social inequality. This is also why CDA may be characterized as a social movement of politically committed discourse analysts.

CDA enables both the identification of “enacted” food inequalities and an understanding of their reproduction and legitimation. It also situates activist resistance to inequality in its social and political context: “Relations of power and dominance (cf. Foucault, Bourdieu, and Gramsci), however, can be discursively resisted as well as counter-resisted in a dynamic of struggle over securing and challenging the interest in stake” (Lazar, 2005, p. 10). Such an approach identifies limitations as well as potentials of the FPC as a platform for ecological, democratic, and just transformations. Importantly, there is not one CDA method; CDA is strengthened by the broad range of approaches it incorporates. Key is the examination of discourse as dialectically related to social processes, and its role in maintaining and reproducing social and institutional structures and power imbalances. CDA also exposes these inequalities and therefore challenges their hegemony so as to foster social change (Fairclough, 2013).

3.1. Methods and Data Collection

Three types of data were combined in their collection: (a) ethnographic field notes; (b) documents and social media posts; and (c) semi-structured interviews. First, many participant observations were undertaken during events, general assemblies, project meetings, and protest actions in which the FPC took part. This engaged (Frampton et al., 2006; Rasch & Van Drunen, 2017) and multi-sited (Marcus, 1995, 1999) ethnographic fieldwork took place over a period of four years and aided in tracing the internal structures and

discourses of FPC activists. Further, the multi-sited ethnographic work facilitated an understanding of the multiscalarity of the BFPC; it is important to recognize that this study is localized, with specific spatial characteristics. The goal is not to generalize, but rather to focus on understanding the unique aspects of this case in an examination of how they may complement other studies of AFNs and FPCs. Observations and experiences from the ethnographical work were documented in 10 handwritten field diaries, several digital and hand-drawn mind maps, and various sketches—a useful source, lending support to findings from the remaining two data collection methods.

Second, press releases, position papers, and other published materials, including two books, were collected, as were one food strategy catalog and one intercultural recipe book published online by the BFPC between 2018 and 2024; social media posts on Instagram from the years 2021 to 2023 were also included.

Third, a total of 15 semi-structured interviews with activists from the BFPC were conducted. All speakers and hired staff were interviewed, along with those most active in its various working groups and projects. The goal was to not only record the core group perspective but also those of the most engaged activists during the period of fieldwork. A longer-term view was provided by one activist from the foundation period. Interviews were transcribed with the programs Trint and NoScribe.

3.2. Data Organization and Coding

Following data collection, an inductive coding of the material was conducted in two stages based on Saldana's *Coding Manual* (Saldana, 2015). Thematic and explorative coding was applied to identify patterns and themes related to the research question. It was however open enough to allow for the discovery of new and unexpected tendencies. Upon the completion of a first set of descriptive thematic codes, clustering was used to distinguish broader patterns as called for by qualitative content analysis methodology (Mayring & Fenzl, 2019). In the second stage, these thematic clusters were once again coded to achieve a set of analytical codes—and to consolidate empirical observations, the analytical framework, and the methodological approach of CDA. This final step aimed to identify common themes and practices in the written and verbal discourse of food activists, and to spotlight those hierarchies and inequalities “enacted, reproduced, legitimated, and resisted” (Van Dijk, 2015, p. 466) as well as perceptions and debates on food democracy and justice within the BFPC.

4. The BFPC

The Ernährungsrat Berlin—the German name of the BFPC—was founded on April 22, 2016, at the Center for Art and Urbanistics in Berlin (ZK/U) by citizens of Berlin and Brandenburg. Figure 2 depicts a turning point for urban food politics and strategic urban planning in the German capital around 2015, when Berlin, with other cities, signed the Milan Pact. It was hardly a coincidence that a year on, the BFPC emerged from a local working group created in 2014 (Interview_21, 2024). An open movement lacking formal membership, it welcomes all who seek to change food and agriculture politics in the Berlin region. Yet some structure was found to be necessary; a group of spokespersons developed a non-profit association in accordance with a resolution passed by the general assembly in 2018 to apply for and manage funds. The Ernährungsrat Berlin e.V. has been registered as an NGO since June 2018 and maintains an office in the Berlin Global Village, located in the neighborhood of Neukölln (BFPC, 2018).

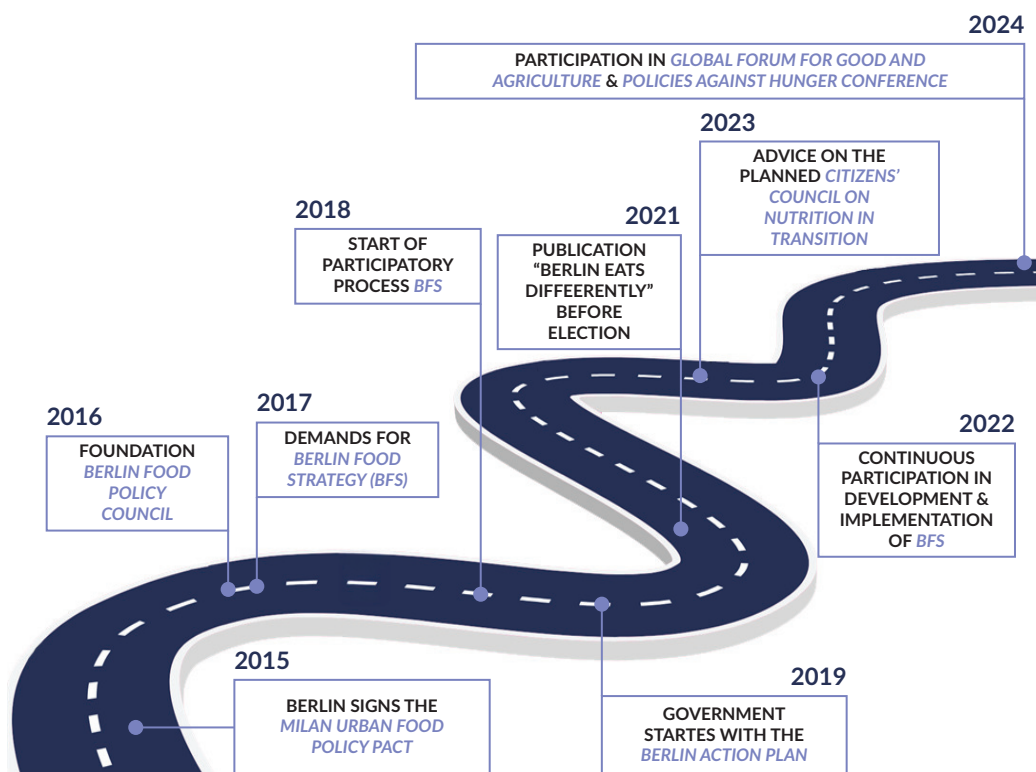


Figure 2. Different milestones of the BFPC in food politics on the local and federal levels.

The BFPC lays out its goals for food system transformation on its website as follows:

The Berlin Food Policy Council is the platform for all local and regional actors who are active in this transformation. From this platform the participating consumers, farming producers, urban gardeners, food rescuers, representatives of the local gastronomy and food economics, scientists, representatives of associations, clubs, and educational institutions and others develop their common goals and strategies and turn them into political activities and actions. (BFPC, 2023)

In its first year, the BFPC produced a catalog comprised of nine demands for a Berlin Food Strategy, conveyed to the city administration in 2017 (Figure 3a). Many of its strategic aims focused on sustainability and transition toward a regional and ecologically sound food system, such as community gardens. Others were more oriented toward social themes, such as public canteens and the active political participation of Berlin citizenry through a so-called food campus. Lastly, the BFPC also sought to hold politicians and officials accountable by demanding improved coordination among the senate, the district administration, and citizens.

In 2018, the city government—a coalition of the Social Democrats, The Left, and the Greens—proposed a participatory strategy, undertaken with stakeholders in politics, business, and across civil society (including the BFPC). It initially yielded the Berlin Action Plan of 2019, which included eight fields of action for the urban food system in Berlin. The Action Plan marked the BFPC's first significant achievement, as most of its claims were incorporated: fostering public canteens, revaluing regional food chains, creating diverse neighborhood food consumption structures, reducing food waste and packaging, greater transparency for consumers, more food education programs, and improved collaboration with the municipal administration. In 2020, the BFPC



Figure 3. Different forms of knowledge production undertaken by the BFPC: (a) a catalog of demands for the Berlin Food Strategy sent to local governments in 2017; (b) the Action Conference for the Berlin Action Plan, initiated in 2018; and (c) the book *Berlin Eats Different*, publicizing ideas and already existing transformative practices and projects underway in Berlin and Brandenburg.

organized an Action Conference with several “idea kitchens” whose purpose was the implementation of the Action Plan (Figure 3b). In synthesizing the knowledge and experience of more than 300 people, it became an incubator for important ideas and urban food planning (BFPC, 2020). One of the indirect outcomes was the publication of the book *Berlin Eats Different* (Figure 3c), which for the first time combined expert insight and analysis of the problems with Berlin’s prevailing food system. It also contains an “inventory” of various extant Berlin-based initiatives, projects, and strategies (BFPC, 2021). The book was published before the city election in 2021 and handed to politicians from different parties to emphasize the need for continuous work on urban food politics and cross-sectoral implementation of the Action Plan.

In 2021, due to the Covid-19 pandemic, the war in Ukraine, increasing consequences of climate change for food production, and the rising cost of food, food insecurity became more prominent in German public discourse. Increasing media attention was trained on those in marginalized and precarious situations who were affected by multiple crises (health, security, climate, and economy). Food insecurity—hitherto associated with the unemployed, underemployed, and those receiving social aid—became part of political debate on social participation, health, and local resilience (Birner et al., 2023). In 2022, a scarcity of healthy food continued to plague a growing share of the population. Due to higher prices, many families found themselves unable to afford good food and opted for cheap and high-calorie alternatives. The homeless lost access to soup kitchens and other social initiatives due to social distancing and closed facilities, and the elderly were abandoned—left isolated in their rooms or retirement homes, with no ability to share a meal with others. Under such conditions, the social component of food was necessarily emphasized in the concept of food poverty (Biesalski, 2021; Monetti, 2024). There are two registers of food poverty: the material deprivation of nutrients and a healthy diet, and the lack of social and cultural participation through food (Pfeiffer, 2014). The BFPC played an active role in setting this new agenda and made it visible in agri-food politics in Berlin and Germany-wide. In 2023, the BFPC joined the EU project FoodCLIC with the goal of monitoring food poverty and environment—“the physical, economical, political, and sociocultural context in which each consumer engages with the food system” (Franco et al., 2016, p. 22)—in the neighborhoods of Rollberg (Neukölln) and Falkenhagener Weg (Spandau), so as to measure food poverty in urban spheres (BFPC, 2022). The aim was to engage those experiencing food poverty—not to speak about them but with them, to understand their struggles, and to develop alternative food strategies collaboratively,

instead of reproducing stereotypes and prejudices: “When one talks about poor people and nutrition, unfortunately, it’s that they can’t do something, or that they are buying the wrong food, or that you have to teach them something” (Interview_3, 2023).

In 2024, the BFPC participated in the Global Forum for Food and Agriculture, in the Conference Policies Against Hunger, and as advisor to the citizens’ council Nutrition in Transition initiated by the German government, which aimed to expand citizen participation in the Food Strategy nationally. Through these national and international engagements, the BFPC sought to prioritize food injustice and poverty within German politics, and to monitor policy development in the citizens’ council. At two international events, the BFPC introduced a speaker from the Poverty Network Germany to report on the daily experience of food poverty. Yet such reports did not remain merely personal; they rather emphasized structural problems and held the state responsible for combating hunger in Germany. This approach symbolizes a shift in the dominant discourse in agri-food politics in Germany: Hunger had usually been associated with development aid in the so-called Global South and peripheries. Despite the recognition by the Minister for Food and Agriculture and the incorporation into the National Food Strategy in 2024, little has been achieved concretely until now (Rücker, 2024). The growing recognition of “hidden hunger” (Biesalski, 2020) and food insecurity in Germany under the concept of “food poverty” (Pfeiffer, 2014) can be seen as another indication that the BFPC is among the most capable advocates in its field. In the words of one of the activists: “We are currently experiencing a shift. Ten years ago, the question of the social impact of the agri-food system hardly played a role. New questions are coming into focus...the urgency of a societal food transformation” (Interview_3, 2023).

5. Transformative Potential and Challenges of the BFPC

Figure 4 shows the dominant aspects of food inequalities (Motta, 2021a) addressed by the BFPC activist discourse and collective action. The frequency of the mention of each type of inequality is illustrated by its corresponding typeface size and the surrounding bubble. Dots arranged in circular lines connect these categories and highlight the linkages between structural forces. The dots size and color are kept irregular to signify that interconnections are not always associated in analyzed data; they show that new dimensions of inequalities may arise. A spiral structure of the dotted lines illustrates the fact that the coded inequalities are changing in a constantly moving field, and that the present analysis therefore only constitutes a snapshot.

Unsurprisingly, since the emergence of the platform, political, economic, and environmental inequalities have been most frequently addressed. As one activist from the BFPC stated: “Basically, food democracy is about participation in the food system and opportunities for co-determination in food politics that do not currently exist in this form” (Interview_4, 2022). Activists clearly see that the road to transformation is political. Regarding economic transformation, there is no dominant anti-capitalist discourse in the analyzed material, as distinct from the literature on food democracy (Hassanein, 2003). Two notable points should be highlighted: First, epistemological inequalities are frequently mentioned along with the importance of knowledge co-production, as many of the BFPC’s collaborations and projects include educational components. Second, the growing awareness of the city’s cultural and social food inequalities can be found in recent documents and interviews and will be illustrated in what follows.

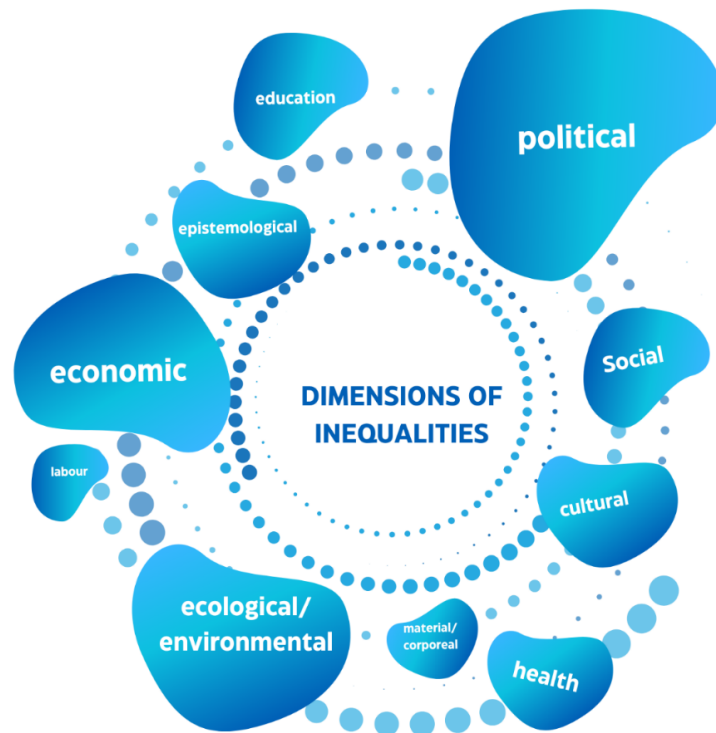


Figure 4. Dimensions of food inequalities coded in the data. Source: Author's own elaboration based on Motta (2021a).

5.1. Dimensions of Inequalities: Knowledge Co-Production and Cultural Differences

Knowledge production is often mentioned as one main component of the BFPC's actions and strategies (it is also described as a central characteristic of food democracy by Hassanein, 2008). Yet a lack of knowledge regarding those with migration backgrounds or those from the working class as related to the transformation of the food system seriously limits the participatory and just transformation approach: "What about all these topics regarding food in which everyone is an expert? Where it's not about educating, but the other way around, understanding ourselves all as teachers of food practices" (Interview_3, 2023). Despite the growing recognition of diverse food knowledge and practices, there is still a lack of representation of this diversity in Berlin's alternative food scene and in the FPC itself.

In response to such homogeneity, the BFPC has attempted to collaborate with initiatives rooted in communities such as Yesil Chamber, Über den Tellerrand, and KATE. Many of these initiatives know of one another, but strategic collaboration remains rare. A kind of segregation prevails among heterogeneous groups engaged in different neighborhoods and communities. Nevertheless, with the Food Strategy in Berlin, there is now a growing awareness of unrealized potential. Such initiatives attempt to connect with one another more actively to exchange knowledge and practices; the intercultural food festival is one such venue for this process. Politics reacts to its lacunae by incorporating diverse perspectives drawn from the Berlin citizenry in a novel format termed the Interkulturelles Netzwerktreffen (intercultural network meeting), begun in 2023 (Figure 5b). Observers are prepared to study any future concrete actions and policy outcomes produced by these network meetings.



Figure 5. Intercultural food initiatives, incorporating knowledge and practices from different Berlin food cultures (reproduction from Instagram): (a) intercultural food festival; (b) intercultural network meeting of Berlin Food Strategy; and (c) meeting organized by the BFPC engaging with Arabic communities.

Significant challenges persist, most notably regarding engagement with non-German speakers. Until recently, communication, events, and actions had been conducted largely in written German: “I was there, many people speak German. I participated for two, three weeks and then I felt a bit alone...can we perhaps offer things in a different language?” (Interview_8, 2022). Beyond language, culture also influences how FPC activists interact with those with migration or refugee backgrounds. Many interviewees referred to different food cultures and habits in their respective communities and the difficulty faced when connecting with the Food Strategy or German activist discourse. Some felt judged and harbored negative associations with sustainability and food discourses: “Such a food education discourse may also attack and devalue” (Interview_3, 2023). Such responses indicate that much more translation work is needed; not only in terms of multi-lingual information, events, and documents, but through broader efforts to translate concepts between cultures when it comes to climate, vegetarianism, and recycling.

The recent debate over halal meat in school canteens illustrates well some of the intercultural tensions confronting FPCs. Some German food activists prioritize animal welfare and oppose halal methods for slaughtering livestock. Many within the Turkish and Arabic communities do not eat pork on religious grounds and prefer serving halal meat to their children. A compromise is to be found in vegetarianism: “I think that’s particularly important in the migrant community, including this topic of halal....People wanted chicken, but only halal, I said no. That clashed. We did argue, but in the end [we said]: let’s agree on vegetarian” (Interview_4, 2022). A vegetarian diet in such a case represents a bridge between cultural positions regarding meat consumption and the environment.

5.2. Intersections of Inequalities: Class Awareness, Critical Whiteness, and Diversity

As the above examples indicate, intersectional food inequalities (Motta, 2021a) are addressed through BFPC activist discourse and action. Figure 6 maps the frequency of each mentioned inequality, as represented by the scale of the typeface and the size of the surrounding bubble. Circular dotted lines connecting various categories signify interconnections. The straight lines in the center show the densest intersections found in the analyzed data; dots and bubbles lacking categories indicate that there may be blind spots, as not all activists from the BFPC were interviewed, such as members of the youth BFPC. Furthermore, just as in Figure 4, the

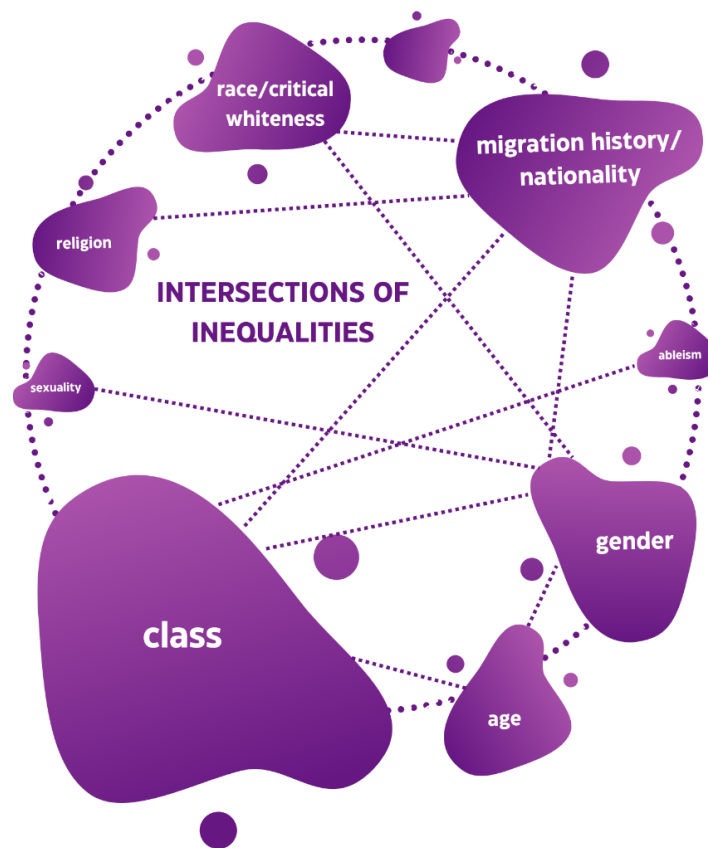


Figure 6. Intersections of food inequalities as coded in the data. Source: Author's own elaboration based on Motta (2021a).

dotted lines emphasize that the coded inequalities change in this constantly moving field and that the present analysis can therefore only represent a snapshot.

Injustices related to class differences are clearly the most frequently mentioned in the data (Figure 6). Several other aspects such as the dominant discourse on inequalities related to migration history and nationality, as well as the growing awareness of critical whiteness, call attention to and match developments when observing the participation, projects, and agenda-setting of the BFPC since 2020: “Those in the active core are actually all academics, white, female, from the eco-left. It’s not diverse. But there are serious attempts to change that” (Interview_2, 2023).

The composition of the BFPC has recently changed, yielding a more heterogeneous group and agenda. Two people with migration and refugee backgrounds were elected as spokespersons. They started to reorient the BFPC’s work, bringing social and cultural aspects of food democracy and justice to the fore through the project *Everyone at the Table*, which addressed a scarcity of healthy food in communities of migrants and refugees. Most significant was the lack of proper ingredients such as raw milk needed to produce traditional cheeses. The project produced a recipe book of healthy, intercultural dishes featuring regional foods, developed at cooking events for migrant communities; national cuisines and customs were given special prominence. The project exemplifies a co-production of alternative food practices and the great potential of food democracy.

Figure 6 attempts to indicate the axes of intersectional inequalities that remain invisible or deprioritized in the contemporary vision of a just food democracy. Many activists underscore the importance or interconnectedness of democracy and justice. When asked about gender inequalities, for example, FPC activists concede that most activists are women and deduce that therefore feminist standpoints should be automatically present. Some understand gender inequality to be a problem mainly for other world regions:

[Gender inequality] hasn't been an issue so far. It wasn't a set topic, but I'm aware of it. Yes, of course, I am aware that women mainly feed families, especially in countries of the Global South. Not so much here, but there....And that here [in Germany] in the restaurants...that's almost all male chefs. Very few women. (Interview_3, 2023)

Regarding gender inequalities in food labor, the activist describes the disparities between predominantly male chefs in restaurants and women's responsibility in feeding the family—home cooking remains invisible care work done mostly by women. There is clearly an understanding of gender as an intersectional category of difference. Yet a more strategic approach toward gender inequality remains a blind spot in the BFPC's just food democracy activism. This is quite surprising, since gender equality is often addressed in the literature as a major problem in food system transformation and food justice (Agarwal, 2014a; Desmarais, 2003; Lewis, 2015; Motta, 2021b; Patel, 2012).

In the following two sections, two collective actions will be recounted. Both emerged as a response to the critique of homogeneity and lack of participation of a diverse citizenship in the BFPC. In 2023, the Working Group on Diversity and Participation initiated a new action called Food Justice Get-Togethers, intended to confront certain problems with the prevailing strategies of rectifying food injustices. The second action was the Mobile Food Campus on Tour, which aimed to broaden the participation of citizens from different communities in Berlin. These actions are attempts to democratize food practices and to foster co-determination of food politics by incorporating a wider range of political subjects. They also, however, indicate the limitations of scaling up highly localized alternative practices toward prefigurative political strategies and food policies.

5.2.1. Food Justice Get-Togethers

The idea for the collective action consisted of a quarterly gathering to discuss different problems and ideas for how to tackle food injustices in Berlin. Invitations and communication were circulated in English in order to include non-German speakers and to reach interested people in different communities. Those attending the first two meetings included: a chef from a Syrian school canteen, a Polish leader of a community garden, a Syrian farmer, an Afghan pastry chef, an Afghan sociology student, an American food justice activist, a Brazilian food scientist, and several German food activists and scientists—all of whom shared the difficulties they faced, their achievements and demands for transforming their neighborhood food systems, and those of their communities and families. Many articulated the barriers to further participation in local food politics and identified difficulty with the German language as central. After initial introductions and the formulation of an agenda and aims, the group then tried to reach those from the Arabic and Turkish communities located in the neighborhood of the BFPC headquarters. Here, the intent was to initiate the first actions embedded in the immediate surroundings in order to collaborate with local residents. Some materials were therefore translated not only into English and German but also into Arabic and Turkish (see Figure 7). The meeting topics of the seven Food Justice Get-Togethers were the following:

- Brainstorming on food justice in Berlin;
- International perspective on food justice—experiences from Syria and Afghanistan;
- Assessing food poverty and food environments in Berlin and its different neighborhoods;
- Diverse food cultures in Berlin and Brandenburg, e.g. Syrian cheese producers;
- Inclusive food transition and the right to food in Berlin;
- Inclusive food transition and food poverty in Neukölln and Spandau;
- Equal opportunities start with food in Moabit.

The meeting topics reflect the plurality of food justice issues in relation to other critical concepts and demands coined by food movements: food poverty, food environments, food cultures, and the right to food. Notably, the concept of food sovereignty or community food security as a prominent banner of radical food movements and AFNs is not represented. Themes derive directly from the participants' sharing and co-producing knowledge based on the diverse experiences of Berlin life. A Syrian cheesemaker in Brandenburg recounted the challenges of producing traditional Syrian products for communities in Berlin. Neighborhood and local food politics were the main spheres of transformation, but the family and the community were also often mentioned during the gatherings, showcasing the intersection of multiscale (local, regional, neighborhood) and cultural-identitarian spheres (community, family). This action is an important first step toward expanding citizen participation in food politics. However, it remains to be seen how concrete proposals or changes in urban food policies in Berlin will emerge from this practice.



Figure 7. Invitation to a quarterly Food Justice Get-Together (reproduction from the Instagram of the BFPC).

5.2.2. Mobile Food Campus on Tour

The idea of a food campus—a physical site of exchange, a hub of thought, production, and exploration of the future and transformation of Berlin's food system—had already been contemplated as early as 2018. Originally planned to be located at Berlin's old central airport, which is now the park Tempelhofer Feld, the proposal encountered many obstacles before it could be realized. Then, in 2023, with funding from the Berlin Senate

as part of the Berlin Food Strategy, a group founded the Mobile Food Campus on Tour, organized around a basic setup: a bike trailer with a kitchen, foldable table, and material for cooking and eating, to be used as a venue for developing plans for transforming the citywide food infrastructure (see Figure 8). Down to the present, the Mobile Food Campus has been used in different neighborhood festivals and events to connect people in the city, generate networks, and map specific needs and demands. The food campus fosters knowledge co-production and exchange regarding alternative food practices from the kitchen to the city government, from the fields to the markets, in both city and countryside.



Figure 8. Mobile Food Campus on Tour at various Berlin neighborhood festivals (reproduction from the Instagram of the BFPC).

One aim of the Mobile Food Campus is to learn about social innovations that are already laying the groundwork for alternatives to the dominant system:

Knowledge also creates justice. Knowledge is such a power and somehow also a way of sharing and of opportunities for action, which can also be political engagement. We're talking a lot about that at the moment: where do we want to take our tours [with the Mobile Food Campus]. (Interview_5, 2023)

Such action is not limited to the neighborhood scale; the Mobile Food Campus holds sustainable and just food events focusing on production, consumption, urban–rural connections, regional systems, and knowledge and innovation in various national settings. Knowledge exchange and co-production with citizens of this type is part of the process of creating a revised BFPC catalog, a list of policy demands that will include claims and best practices from participatory interactions with people across Berlin's neighborhoods, to be sent to the Berlin Senate. It remains to be seen how politicians will adapt or expand the current Food Strategy in Berlin.

5.3. Multiscalarity: Places of Collective Action and Reflexive Localism

The multiple scales of food system transformation and consequent challenges are yet another frame for activist discourse. Scale imposes itself at the practical level of everyday life in Berlin, where long distances and variations in districts can pose a challenge, and where the entanglements of the local and the global are also felt. A “reflexive localism” (D. Goodman et al., 2012) criticizes the binary of the global and the local. It harnesses the power of global food regimes and confronts capitalist, colonial power while “consciously struggling against inequality in local arenas” (DuPuis et al., 2006, p. 241).

The Food Justice Get-Togethers and the Mobile Food Campus are present in these local arenas. Figure 9 shows the points in the city where the BFPC has been active thus far in tandem with these two collective actions. Activity is still concentrated in the city center, but it is slowly expanding outward. BFPC activity also includes cultivating urban–rural connections between Berlin and Brandenburg through its projects of reinforcing regional value chains with community-supported agriculture models. These intend to resist the highly concentrated food retail structures in Germany and their dependency on global, capitalist agri-food exploitation. It is in this manner that the BFPC practices reflexive localism and organizes its collective actions to catalyze resistance and structural transformation.



Figure 9. Places of action with Food Justice Get-Togethers (yellow symbol) and Mobile Food Campus (rose symbol).

6. Discussion and Conclusion

The BFPC's various collective actions indicate a potential for promoting the democratic transformation of the Berlin food system through the active participation in and co-determination of food politics. The incorporation of the BFPC's positions into the Berlin Action Plan represented one key step in overcoming political inequalities in the city's urban planning. Current developments of a second version will involve a more intersectional and multiscalar approach to food justice as derived from the Food Justice Get-Togethers and the Mobile Food Campus. It remains an open question whether the Berlin government will adopt these latest extended demands.

Activists stress the need for knowledge co-production as an important element in the practice of food democracy, and they are therefore sensitive to critical points of exclusions in the predominantly white, middle-class, academic alternative food scene. However, other difficulties persist in strategies for overcoming structural inequalities. The focus on food education, common to many projects, may hinder

political transformation: “Too many people think that they can save the sector with education policy measures. And then these education policy areas see themselves as completely removed from politics. They don’t want politics to take place in their area” (Interview_1, 2023). Despite the recognition of different types of knowledge and a willingness to collaborate and innovate—as in, for instance, proposals for a new logistics of local food consumption (or *Lebensmittelpunkte*)—the project sometimes risks allowing quotidian matters to eclipse the more fundamental objective of structural transformation.

Another challenge involves intersectional inequality and exclusion. When comparing the period of the founding of the BFPC to its condition eight years on, several activists and documents chart a deterioration; they refer to larger numbers and greater diversity of engaged citizens in the founding phase of the BFPC. The development of the catalog of demands (BFPC, 2017) punctuates this trend, according to one interviewee: “At that time it was also about writing this policy paper, establishing the cornerstones, so to speak. And the plenums were also much fuller, there were 160 people. We don’t experience anything like that now” (Interview_11, 2024). This change in BFPC participation is strongly linked to certain political moments and projects and raises questions about the internal social reproduction and legitimacy of the BFPC as they pertain to fundamental ideas of democratic participation, co-determination, and representation.

In almost all conversations, BFPC activists brought up a lack of time and related conflicts between paid labor and unpaid activism: “I would say that the main problem we are seeing right now, or that I see, is: How much can you do on a voluntary basis?” (Interview_2, 2022). These barriers were more severe for those struggling with serious socio-economic constraints, especially when they were obliged to deal with intersecting inequalities simultaneously. One of the most profound challenges in this context is cultural differences and language, or, more broadly, the ability to communicate the ideas of ecological, democratic, and just food. Many such alternative concepts were developed by and according to the worldview of German academics, and that can occlude other perspectives.

Finally, agenda-setting may not always match the real priorities of Berlin’s population. A more recent focus on food poverty is promising and is indicative of a counterbalance to the following critique:

Urban food initiatives tend to focus on topics of sustainability and environmental protection....As a result, there is often a narrow focus on sustainability in expense for questions of justice and equity....The limited discussion in the burgeoning German urban food initiative scene of food poverty and food-related unequal participation in social life is still concerning. (Rosol, 2023, p. 78)

A combination of challenges facing the BFPC threatens to limit its efforts. These are: a shortage of long-term members, a scarcity of time, difficulties facing unpaid labor and its funding, and a lack of strategic and democratic agenda-setting necessary for transcending social, cultural, and epistemological divisions. Such obstacles are exacerbated by the difficulties arising when struggling for political influence at the municipal level, as local governments fail to recognize that “food is political” (Interview_1, 2023), and that food politics requires cross-sectoral action. Consequently, local political realities seriously limit the transformative potential of the BFPC. But BFPC activists are well aware of these challenges and are working to reorient their actions so as to unite diverse citizens in the development of a just and democratic strategy responsive to different groups and political subjects, their needs, and what they envision for Berlin’s food system.

This study has shown that the BFPC answers the critique of class and racial blindness (Slocum, 2007) and aims to overcome a certain “unbearable whiteness” (Guthman, 2011) of alternative food initiatives. Enormous barriers in overcoming structural and intersectional food inequalities still persist (Alkon, 2014; Cadieux & Slocum, 2015; Motta, 2021b), but some practical success has been registered, for example in the publication of multilingual materials, an internal awareness process, targeted project work on diversity and participation, agenda-setting for food justice and food poverty, and the multiscale approach to the city and its diversity of communities in rural, urban, and regional surroundings. Hopefully, such strategies will be adopted by other FPCs, AFNs, and food movements in Germany and beyond.

Acknowledgments

I would like to thank my interviewees for their time and commitment. I would also like to thank the Food for Justice team, especially Prof. Renata Motta, for their feedback, and Joshua Rahtz for his excellent proofreading. I would also like to thank all those who commented on my presentations of this research at the German Congress of Geography in Frankfurt in 2023, the Food for Justice International Workshop in Heidelberg in 2024, and my joint presentation with Judith Müller at the AK Agri-Food meets AK Geographische Handelsforschung conference in Würzburg in 2024.

Funding

This work was supported by the German Ministry of Education and Research (BMBF) under Grant 031B0752. Publication of this article in open access was made possible through the institutional membership agreement between the Freie Universität Berlin and Cogitatio Press.

Conflict of Interests

The author declares no conflict of interests.

References

- Agarwal, B. (2014a). Food security, productivity, and gender inequality. In R. J. Herring (Ed.), *The Oxford handbook of food, politics and society* (pp. 273–300). Oxford University Press.
- Agarwal, B. (2014b). Food sovereignty, food security and democratic choice: Critical contradictions, difficult conciliations. *The Journal of Peasant Studies*, 41(6), 1247–1268.
- Alkon, A. H. (2014). Food justice and the challenge to neoliberalism. *Gastronomica: The Journal of Critical Food Studies*, 14(2), 27–40.
- Allen, P. (2008). Mining for justice in the food system: Perceptions, practices, and possibilities. *Agriculture and Human Values*, 25(2), 157–161.
- Allen, P. (2010). Realizing justice in local food systems. *Cambridge Journal of Regions, Economy and Society*, 3(2), 295–308.
- Allen, P., & Sachs, C. (2007). Women and food chains: The gendered politics. *The International Journal of Sociology of Agriculture and Food*, 15(1), 1–23.
- Allen, P., & Sachs, C. (2012). Women and food chains: The gendered politics of food. In P. Williams Forson & C. Counihan (Eds.), *Taking food public: Redefining foodways in a changing world* (pp. 23–40). Routledge.
- Barbosa, R., Jr., & Coca, E. (2022). Enacting just food futures through the state: Evidence from Brazil. *Canadian Food Studies/La Revue canadienne des études sur l'alimentation*, 9(2), 75–100.
- Bassarab, K., Clark, J. K., Santo, R., & Palmer, A. (2019). Finding our way to food democracy: Lessons from US food policy council governance. *Politics and Governance*, 7(4), 32–47.

- Bechmann, A. (2021). "A different world is plantable." A case study of how alternative food initiatives build resilience and promote food sovereignty in Franconia, Germany [Unpublished master's thesis]. Lund University.
- Berglund, E., Hassanein, N., Lachapelle, P., & Stephens, C. (2021). Advancing food democracy: The potential and limits of food policy positions in local government. *Journal of Agriculture, Food Systems, and Community Development*, 11(1), 81–98.
- Berlin Food Policy Council. (2017). *Ernährungsdemokratie für Berlin! Wie das Ernährungssystem der Stadt demokratisch und zukunftsfähig relokalisiert werden kann*. https://ernaehrungsrat-berlin.de/wp-content/uploads/2017/09/Ernaehrungsrat_FK_2017_web.pdf
- Berlin Food Policy Council. (2018). *Transparenz*. <https://ernaehrungsrat-berlin.de/transparenz>
- Berlin Food Policy Council. (2020). *Ideenküchen—Unsere Rezepte für die Ernährungswende*. <http://ernaehrungsrat-berlin.de/ideenkuechen>
- Berlin Food Policy Council. (2021). *Berlin isst anders. Ein Zukunfts Menü für Berlin und Brandenburg*. epubli.
- Berlin Food Policy Council. (2022). *FoodCLIC: Inklusive Ernährungswende—Gutes Essen für alle!* <https://ernaehrungsrat-berlin.de/foodclit>
- Berlin Food Policy Council. (2023). *The Berlin Food Policy Council*. <https://ernaehrungsrat-berlin.de/the-berlin-food-policy-council>
- Bernstein, H. (2016). Agrarian political economy and modern world capitalism: The contributions of food regime analysis. *The Journal of Peasant Studies*, 43(3), 611–647.
- Biesalski, H. K. (2020). *Hidden hunger and the transformation of food systems: How to combat the double burden of malnutrition?* Karger Medical and Scientific Publishers.
- Biesalski, H. K. (2021). Ernährungsarmut bei Kindern—Ursachen, Folgen, Covid-19. *Aktuelle Ernährungsmedizin*, 46(5), 317–332.
- Birnbaum, A., & Lütke, P. (2023). Food and governmentality in the green city: The case of German food policy councils. *Urban Planning*, 8(1), 388–398.
- Birner, R., Linseisen, J., Arens-Azevêdo, U., Balmann, A., Biesalski, H. K., Bosy-Westphal, A., Buyken, A., Döring, T., Feindt, P., Götz, K.-U., Iweala, S., Martinez, J., Nieberg, H., Nöthlings, U., Pischetsrieder, M., Renner, B., Spiller, A., Voget-Kleschin, L., Weingarten, P., . . . Wieck, C. (2023). *Ernährungsarmut unter Pandemiebedingungen* (Berichte über Landwirtschaft-Zeitschrift für Agrarpolitik und Landwirtschaft, No. 236). Bundesministerium für Ernährung und Landwirtschaft (BMEL). <https://buel.bmel.de/index.php/buel/article/download/468/683>
- Bornemann, B. (2022). Food sustainability and food democracy: Exploring the links. In B. Bornemann, H. Knappe, & P. Nanz (Eds.), *The Routledge handbook of democracy and sustainability* (pp. 350–367). Routledge.
- Bornemann, B., & Weiland, S. (2019). Empowering people—Democratising the food system? Exploring the democratic potential of food-related empowerment forms. *Politics and Governance*, 7(4), 105–118.
- Brand, U., Muraca, B., Pineault, E., Sahakian, M., Schaffartzik, A., Novy, A., Streissler, C., Haberl, H., Asara, V., Dietz, K., Lang, M., Kothari, A., Smith, T., Spash, C., Brad, A., Pichler, M., Plank, C., Velegrakis, G., Jahn, T., & Görg, C. (2021). From planetary to societal boundaries: An argument for collectively defined self-limitation. *Sustainability: Science, Practice and Policy*, 17(1), 264–291.
- C40. (2024). *About C40*. <https://www.c40.org/about-c40>
- Cadieus, K. V., & Slocum, R. (2015). What does it mean to do food justice? *Journal of Political Ecology*, 22, 1–26.
- Campbell, H. (2009). Breaking new ground in food regime theory: Corporate environmentalism, ecological feedbacks and the 'food from somewhere' regime? *Agriculture and Human Values*, 26(4), 309–319.
- Candel, J. J. (2022). Power to the people? Food democracy initiatives' contributions to democratic goods. *Agriculture and Human Values*, 39(4), 1477–1489.

- Carlson, J., & Chappell, M. J. (2015). *Deepening food democracy: The tools to create a sustainable, food secure and food sovereign future are already here—Deep democratic approaches can show us how*. Institute for Agriculture and Trade. https://www.iatp.org/files/2015_01_06_Agrodemocracy_JC_JC_f_0.pdf
- Carolan, M. (2012). *The sociology of food and agriculture*. Routledge.
- Conway, J. M., & Paulos, A. (2020). Feminism, Food Sovereignty and Cross-Movement Mobilisation Against Neoliberal Globalisation in Latin America: Intertwined Genealogies. *Moving the Social*, 63, 13–39.
- Davies, A. R., Cretella, A., & Franck, V. (2019). Food sharing initiatives and food democracy: Practice and policy in three European cities. *Politics and Governance*, 7(4), 8–20.
- de Carvalho, P. D., Teixeira, M. A., Motta, R., & Penna, C. (2022). Disputing food systems: Responses of social movements to the Covid-19 pandemic. *Revista Brasileira de Ciências Sociais*, 37(108), Article e3710808.
- Desmarais, A. A. (2003). The Via Campesina: Peasant women at the frontiers of food sovereignty. *Canadian Woman Studies*, 23(1), 140–145.
- Doernberg, A., Horn, P., Zasada, I., & Piore, A. (2019). Urban food policies in German city regions: An overview of key players and policy instruments. *Food Policy*, 89, Article 101782.
- DuPuis, E. M., & Goodman, D. (2005). Should we go 'home' to eat? Toward a reflexive politics of localism. *Journal of Rural Studies*, 21(3), 359–371.
- DuPuis, E. M., Goodman, D., & Harrison, J. (2006). Just values or just value? Remaking the local in agro-food studies. In T. Marsden & J. Murdoch (Eds.), *Between the local and the global* (Vol. 12, pp. 241–268). Emerald Group Publishing.
- Escobar, A. (2015). Degrowth, postdevelopment, and transitions: A preliminary conversation. *Sustainability Science*, 10, 451–462.
- Fainstein, S. S. (2014). The just city. *International Journal of Urban Sciences*, 18(1), 1–18.
- Fairclough, N. (2013). *Critical discourse analysis: The critical study of language*. Routledge.
- FAO. (2024). *The Milan Urban Food Policy Pact Monitoring Framework*. <https://www.fao.org/urban-food-agenda/resources/resources-detail/en/c/1416144>
- Fladvad, B. (2018). Die Food Movements und ihre Forderungen: Zur politischen Dimension alternativer Ernährungsgeographien. *Zeitschrift für Wirtschaftsgeographie*, 62(3/4), 201–216.
- Fladvad, B. (2019). Diverse citizenship? Food sovereignty and the power of acting otherwise. *Social Sciences*, 8(12), Article 331.
- Fonte, M. (2013). Reflexive localism: Toward a theoretical foundation of an integrative food politics. *The International Journal of Sociology of Agriculture and Food*, 20(3), 397–402.
- Frampton, C., Kinsman, G., Thompson, A. K., & Tilleczeck, K. (2006). Social movements/social research: Towards political activist ethnography. In C. Frampton, G. Kinsman, A. K. Thompson, & K. Tilleczeck (Eds.), *Sociology for changing the world: Social movements/social research* (pp. 1–17). Fernwood.
- Franco, M., Bilal, U., & Díez, J. (2016). Food environment. In B. Caballero, P. Finglas, & F. Toldrá (Eds.), *Encyclopedia of food and health* (pp. 22–26). Academic Press.
- Friedmann, H. (2005). From colonialism to green capitalism: Social movements and emergence of food regimes. In F. H. Buttel & P. McMichael (Eds.), *New directions in the sociology of global development* (pp. 227–264). Emerald Group Publishing.
- Friedmann, H., & McMichael, P. (1989). Agriculture and the state system: The rise and decline of national agricultures, 1870 to the present. *Sociologia Ruralis*, 29(2), 93–117.
- Geels, F. W. (2019). Socio-technical transitions to sustainability: A review of criticisms and elaborations of the multi-level perspective. *Current Opinion in Environmental Sustainability*, 39, 187–201.
- Goodman, D., DuPuis, E. M., & Goodman, M. K. (2012). *Alternative food networks: Knowledge, practice, and politics*. Routledge.

- Goodman, M. K. (2016). Food geographies I: Relational foodscapes and the busy-ness of being more-than-food. *Progress in Human Geography*, 40(2), 257–266.
- Grisa, C. (2021). Public policies, food and nutrition security, and sustainable food systems: Convergences from the Food Acquisition Program. In C. M. Galanakis (Ed.), *Food security and nutrition* (pp. 181–207). Elsevier.
- Grisa, C., & Zimmermann, S. A. (2015). Estado e sociedade civil na promoção da segurança alimentar e nutricional no Brasil: A construção do Programa de Aquisição de Alimentos da Agricultura Familiar (PAA). *Agroalimentaria*, 21(41), 17–36.
- Gupta, C., Campbell, D., Munden-Dixon, K., Sowerwine, J., Capps, S., Feenstra, G., & Kim, J. V. S. (2018). Food policy councils and local governments: Creating effective collaboration for food systems change. *Journal of Agriculture, Food Systems, and Community Development*, 8(B), 11–28.
- Guthman, J. (2008). Bringing good food to others: Investigating the subjects of alternative food practice. *Cultural Geographies*, 15(4), 431–447.
- Guthman, J. (2011). “If they only knew.” The unbearable whiteness of alternative food. In A. H. Alkon & J. Agyeman (Eds.), *Cultivating food justice: Race, class and sustainability* (pp. 263–281). MIT Press.
- Harper, A., Shattuck, A., Holt-Giménez, E., Alkon, A., & Lambrick, F. (2009). *Food policy councils: Lessons learned* (Development Report No. 21). Food First. <https://archive.foodfirst.org/publication/food-policy-councils-lessons-learned>
- Harris, E. (2009). Neoliberal subjectivities or a politics of the possible? Reading for difference in alternative food networks. *Area*, 41(1), 55–63.
- Hassanein, N. (2003). Practicing food democracy: A pragmatic politics of transformation. *Journal of Rural Studies*, 19(1), 77–86.
- Hassanein, N. (2008). Locating food democracy: Theoretical and practical ingredients. *Journal of Hunger & Environmental Nutrition*, 3(2/3), 286–308.
- Hoinle, B. (2020). “We don’t eat flowers”—Spatial empowerment and commons in peri-urban agroecological networks as answer to socio-ecological conflicts in Colombia. In A. Exner, S. Kumnig, & S. Hochleithner (Eds.), *Capitalism and the commons* (pp. 50–67). Routledge.
- Holt-Giménez, E. (2011). Introduction: Food movements unite! Strategies to transform our food systems. In E. Holt-Giménez (Ed.), *Food movements unite* (pp. 1–8). Food First.
- Holt-Giménez, E., & Shattuck, A. (2011). Food crises, food regimes and food movements: Rumbblings of reform or tides of transformation? *The Journal of Peasant Studies*, 38(1), 109–144.
- Holt-Giménez, E., & Wang, Y. (2011). Reform or transformation? The pivotal role of food justice in the US food movement. *Race/Ethnicity: Multidisciplinary Global Contexts*, 5(1), 83–102.
- Jarosz, L. (2000). Understanding agri-food networks as social relations. *Agriculture and Human Values*, 17(3), 279–283.
- Kilmer, C. (2012). *Where’s the justice? A review of the local food movement through a reflexive lens* (All Graduate Plan B and other Reports, Spring 1920 to Spring 2023, No. 172). Utah State University. https://digitalcommons.usu.edu/gradreports/?utm_source=digitalcommons.usu.edu%2Fgradreports%2F172&utm_medium=PDF&utm_campaign=PDFCoverPages
- Kropp, C. (2018). Urban food movements and their transformative capacities. *The International Journal of Sociology of Agriculture and Food*, 24(3), 413–430.
- Kropp, C., & Müller, C. (2018). Transformatives Wirtschaften in der urbanen Ernährungsbewegung: Zwei Fallbeispiele aus Leipzig und München. *Zeitschrift für Wirtschaftsgeographie*, 62(3/4), 187–200.
- Kropp, C., & Stinner, S. (2018). Wie weit reicht die transformative Kraft der urbanen Ernährungsbewegung? *Soziologie und Nachhaltigkeit*, 4(1), 26–50.

- Lang, T. (1998). Towards a food democracy. In S. Griffiths (Ed.), *Consuming passions: Food in the age of anxiety* (pp. 13–23). Manchester University Press.
- Lang, T. (1999). Food policy for the 21st century: Can it be both radical and reasonable? In M. Koc, R. MacRae, L. J. A. Mougeot, & J. Welsh (Eds.), *For hunger-proof cities: Sustainable urban food systems* (pp. 216–224). International Development Research Centre.
- Lang, T. (2007). Food security or food democracy? *Pesticide News*, 78, 12–16.
- Lazar, M. M. (2005). *Feminist critical discourse analysis: Gender, power, and ideology in discourse* (1st ed.). Palgrave Macmillan.
- Lewis, D. (2015). Gender, feminism and food studies: A critical review. *African Security Review*, 24(4), 414–429.
- Marcus, G. E. (1995). Ethnography in/of the world system: The emergence of multi-sited ethnography. *Annual Review of Anthropology*, 24(1), 95–117.
- Marcus, G. E. (1999). What is at stake—and is not—in the idea and practice of multi-sited ethnography. *Canberra Anthropology*, 22(2), 6–14.
- Mares, T. M., & Alkon, A. H. (2011). Mapping the food movement: Addressing inequality and neoliberalism. *Environment & Society*, 2, 68–86.
- Mayring, P., & Fenzl, T. (2019). Qualitative Inhaltsanalyse. In N. Baur & J. Blasius (Eds.), *Handbuch Methoden der empirischen Sozialforschung* (pp. 633–648). Springer.
- McMichael, P. (2005). Global development and the corporate food regime. In F. H. Buttel & P. McMichael (Eds.), *New directions in the sociology of global development* (pp. 265–299). Emerald Group Publishing.
- McMichael, P. (2009a). A food regime analysis of the ‘world food crisis.’ *Agriculture and Human Values*, 26(4), 281–295.
- McMichael, P. (2009b). A food regime genealogy. *The Journal of Peasant Studies*, 36(1), 139–169.
- McMichael, P. (2011). Food system sustainability: Questions of environmental governance in the new world (dis) order. *Global Environmental Change*, 21(3), 804–812.
- Michel, S., Wiek, A., Bloemertz, L., Bornemann, B., Granchamp, L., Villet, C., Gascón, L., Sipple, D., Blanke, N., Lindenmeier, J., & Gay-Para, M. (2022). Opportunities and challenges of food policy councils in pursuit of food system sustainability and food democracy—A comparative case study from the Upper-Rhine region. *Frontiers in Sustainable Food Systems*, 6, Article 916178.
- Milan Urban Food Policy Pact. (2015). *Milan Urban Food Policy Pact*. <https://www.milanurbanfoodpolicypact.org/the-milan-pact>
- Monetti, S. (2024). Ernährungsarmut in Deutschland: Es kann nicht sein, was nicht sein darf. *Politikum*, 10(2), 26–31.
- Motta, R. (2021a). *Food for justice: Power, politics and food inequalities in a bioeconomy. Preliminary research program* (Food for Justice Working Paper Series No. 1). Food for Justice.
- Motta, R. (2021b). Social movements as agents of change: Fighting intersectional food inequalities, building food as webs of life. *The Sociological Review*, 69(3), 603–625.
- Motta, R., & Martin, E. (2021). Food and social change: Culinary elites, contested technologies, food movements and embodied social change in food practices. *The Sociological Review*, 69(3), 503–519.
- Netzwerk der Ernährungsräte. (2024). *Das Netzwerk*. <https://ernaehrungsraete.org>
- Patel, R. C. (2012). Food sovereignty: Power, gender, and the right to food. *PLoS Medicine*, 9(6), Article e1001223.
- Pfeiffer, S. (2014). *Die verdrängte Realität: Ernährungsarmut in Deutschland—Hunger in der Überfluggesellschaft*. Springer.
- Pollan, M. (2010, June 10). The food movement, rising. *The New York Review of Books*, 57. <https://www.nybooks.com/articles/2010/06/10/food-movement-rising>

- Pungas, L. (2023). Dachas and food democracy—What makes a (good) food citizen? *Frontiers in Sustainable Food Systems*, 7, Article 1052298.
- Rasch, E. D., & Van Drunen, S. (2017). Engaged ethnography as solidarity? Exploring sites for academic-activist dialogues and collaborations in engaged ethnographic research in the field of natural resource conflicts. *Etnofoor*, 29(2), 23–38.
- Recine E. G. I. G. (2023). Consea is back! Or how to resist in challenging times. *Cadernos de Saúde Pública*, 39(6), Article e00086523. <https://doi.org/10.1590/0102-311XEN086523>
- Renting, H., Schermer, M., & Rossi, A. (2012). Building food democracy: Exploring civic food networks and newly emerging forms of food citizenship. *The International Journal of Sociology of Agriculture and Food*, 19(3), 289–307.
- Roep, D., & Wiskerke, J. S. (2012). On governance, embedding and marketing: Reflections on the construction of alternative sustainable food networks. *Journal of Agricultural and Environmental Ethics*, 25, 205–221.
- Rombach, M., & Bitsch, V. (2015). Food movements in Germany: Slow food, food sharing, and dumpster diving. *International Food and Agribusiness Management Review*, 18(3), 1–24.
- Rosol, M. (2015). Die ernährungsgerechte Stadt schaffen. In A. Strüver (Ed.), *Geographien der Ernährung: Zwischen Nachhaltigkeit, Unsicherheit und Verantwortung* (Vol. 7, pp. 51–65). Institut für Geographie der Universität Hamburg.
- Rosol, M. (2018). Alternative ernährungsnetzwerke als alternative ökonomien. *Zeitschrift für Wirtschaftsgeographie*, 62(3/4), 174–186.
- Rosol, M. (2020). On the significance of alternative economic practices: Reconceptualizing alterity in alternative food networks. *Economic Geography*, 96(1), 52–76.
- Rosol, M. (2023). Good food for all? Navigating tensions between environmental and social justice concerns in urban community food initiatives. In O. Morrow, E. Veen, & S. Wahlen (Eds.), *Community food initiatives* (pp. 77–97). Routledge.
- Rosol, M., & Béal, V. (2022). Policies, practices and movements. In B. Bornemann, H. Knappe, & P. Nanz (Eds.), *The Routledge handbook of democracy and sustainability* (pp. 267–282). Routledge.
- Rosol, M., Holt-Giménez, E., Kepkiewicz, L., & Vibert, E. (2022). Towards just food futures: Divergent approaches and possibilities for collaboration across difference. *Canadian Food Studies/La Revue canadienne des études sur l'alimentation*, 9(2), 1–30.
- Rosol, M., & Strüver, A. (2018). (Wirtschafts-)Geographien des Essens: Transformatives Wirtschaften und alternative Ernährungspraktiken. *Zeitschrift für Wirtschaftsgeographie*, 62(3/4), 169–173.
- Rücker, M. (2024, July 18). Millionen sind zu arm für gesundes Essen: Özdemirs vergeblicher Kampf. *Frankfurter Rundschau*. <https://www.fr.de/politik/millionen-armut-essen-oezdemir-kampf-gruene-ampel-sozialleistungen-hunger-ernaehrung-93192777.html>
- Saldana, J. (2015). *The coding manual for qualitative researchers*. Sage.
- Sarmiento, E. R. (2017). Synergies in alternative food network research: Embodiment, diverse economies, and more-than-human food geographies. *Agriculture and Human Values*, 34, 485–497.
- Scherb, A., Palmer, A., Frattaroli, S., & Pollack, K. (2012). Exploring food system policy: A survey of food policy councils in the United States. *Journal of Agriculture, Food Systems, and Community Development*, 2(4), 3–14.
- Schiff, R. (2007). *Food policy councils: An examination of organisational structure, process, and contribution to alternative food movements* [Unpublished doctoral dissertation]. Murdoch University.
- Schiff, R., Levkoe, C. Z., & Wilkinson, A. (2022). Food policy councils: A 20-year scoping review (1999–2019). *Frontiers in Sustainable Food Systems*, 6, Article 868995.
- Schiller-Merkens, S., & Machin, A. (2023). Knowing food: Sustainability politics, food policy councils and the co-production of knowledge. *International Journal of Politics, Culture, and Society*, 36(3), 311–328.

- Sieveking, A. (2019). Food policy councils as loci for practising food democracy? Insights from the case of Oldenburg, Germany. *Politics and Governance*, 7(4), 48–58.
- Sieveking, A., & Schomerus, T. (2020). Beiräte als Instrument einer Ernährungswende—Die Etablierung von Ernährungsräten in Deutschland. *Natur und Recht*, 42, 680–686.
- Slocum, R. (2007). Whiteness, space and alternative food practice. *Geoforum*, 38(3), 520–533.
- Slocum, R., Cadieux, K., & Blumberg, R. (2016). Solidarity, space, and race: Toward geographies of agrifood justice. *justice spatiale | spatial justice*, 9, 1–40. <https://shs.hal.science/halshs-01507278>
- Stierand, P. (2014). *Speiseräume: Die Ernährungswende beginnt in der Stadt*. oekom.
- Teixeira, M. A., & Motta, R. (2022). Unionism and feminism: Alliance building in the Brazilian Marcha das Margaridas. *Social Movement Studies*, 21(1/2), 135–151.
- Thurn, V. (2020). Der Ernährungsrat Köln und Umgebung. In C. Etezadzadeh (Ed.), *Smart City—Made in Germany: Die Smart-City-Bewegung als Treiber einer gesellschaftlichen Transformation* (pp. 219–226). Springer Fachmedien Wiesbaden.
- Van Dijk, T. A. (2015). Critical discourse analysis. In D. Tannen, H. E. Hamilton, & D. Schiffrin (Eds.), *The handbook of discourse analysis* (pp. 466–485). John Wiley & Sons.
- Vicente-Vicente, J. L., Borderieux, J., Martens, K., González-Rosado, M., & Walthall, B. (2023). Scaling agroecology for food system transformation in metropolitan areas: Agroecological characterization and role of knowledge in community-supported agriculture farms connected to a food hub in Berlin, Germany. *Agroecology and Sustainable Food Systems*, 47(6), 857–889.
- Welsh, J., & MacRae, R. (1998). Food citizenship and community food security: Lessons from Toronto, Canada. *Canadian Journal of Development Studies/Revue canadienne d'études du développement*, 19(4), 237–255.
- Winter, M. (2005). Geographies of food: Agro-food geographies—Food, nature, farmers and agency. *Progress in Human Geography*, 29(5), 609–617.
- Zentgraf, L. L., & Motta, R. (2024). *Food movements in Germany. Analysis of actors in the socio-ecological transformation of the food system* (Food for Justice Working Paper Series No. 11). Food for Justice.

About the Author



Lea Loretta Zentgraf is currently a doctoral researcher in the junior research group Food for Justice: Power, Politics and Food Inequalities in a Bioeconomy (2019–2025), funded by the German Federal Ministry of Education and Research. Since 2021, she has been doing her PhD in global sociology at the Freie Universität Berlin.

A Switch to Commons: The Evolution of the Regulation of Urban Agriculture in Rome, Italy

Micol Sonnino ¹  and Simona Zollet ² 

¹ Department of Geography and Regional Research, University of Vienna, Austria

² Graduate School of Humanities and Social Sciences, Hiroshima University, Japan

Correspondence: Simona Zollet (simona.zollet@gmail.com)

Submitted: 30 October 2024 **Accepted:** 16 May 2025 **Published:** 12 August 2025

Issue: This article is part of the issue “Perspectives on Food in the Sustainable City” edited by Birgit Hoinle (University of Hohenheim), Alena Birnbaum (University of Kassel), and Petra Lütke (University of Münster), fully open access at <https://doi.org/10.17645/up.i395>

Abstract

This article investigates how framing urban agriculture as a “common good” shapes governance structures and fosters participatory processes for sustainable urban development. In October 2024, the City of Rome approved a new regulation on urban agriculture within the broader Regulation for the Shared Administration of Common Goods. This marked a significant evolution in framing urban agriculture as a “commons” compared to the City’s earlier legislation. Drawing on field research, including semi-structured interviews with key stakeholders and analysis of archival data, the study examines how urban agriculture practices in Rome exemplify collaborative governance in action. We argue that the resulting state-society co-creation processes enable cooperation between citizens and the local government, challenging traditional urban planning practices and promoting responsibility-sharing. We also emphasize the importance of co-creation and structured roundtables in fostering mutual awareness of roles and responsibilities. By situating urban agriculture within the broader context of urban commons governance scholarship and connecting it to collaborative governance frameworks, the article contributes to understanding how these theoretical concepts manifest as real-world policy changes. It also calls for further research into the long-term effectiveness of co-creative urban governance and the broader applicability of commons-based legal frameworks to other collective initiatives.

Keywords

collaborative governance; sustainability; urban agriculture; urban commons

1. Introduction

Urban agriculture (UA) plays a crucial role in food production, environmental sustainability, and community well-being in urban spaces (Wadumestrighe Dona et al., 2021). The interactions among stakeholders involved in UA, including citizens, policymakers, and experts, have contributed to the emergence of novel governance patterns (Feinberg et al., 2021).

This article examines the governance of UA by tracing the evolution of its regulatory framework in Rome, Italy, from the original Resolution n.38, 2015 (City of Rome, 2015) through its most recent transformation in the *Deliberazione dell'Assemblea Capitolina* n.117 of 25th October 2024 (City of Rome, 2024a).

Resolution n.38 of 2015 gained recognition as a "best practice" by European Union (EU)-funded projects (URBACT, n.d.-a). Subsequently, through a comprehensive revision process that engaged multiple stakeholders, a new regulation draft was collectively developed. This revision integrated the UA regulation within a broader legislative framework: The *Regolamento per l'amministrazione condivisa dei beni comuni di Roma Capitale* (*Deliberazione dell'Assemblea Capitolina* n. 102/23)—the Regulation for the Shared Administration of Common Goods of Rome (Capitol Assembly Deliberation n.102/23).

This revision culminated with the unanimous approval of a new regulation by the Capitol Assembly of Rome on October 25th, 2024 (City of Rome, 2024a), effectively linking the UA regulation to the Regulation for the Shared Administration of Common Goods. This represents a significant redefinition of the conceptualization of UA in Rome as urban commons, reflecting a shift in governance patterns.

This article explores the implications of this shift by situating UA within the broader urban commons governance scholarship, an emerging field of study. The study seeks to address the following research question:

- What are the implications of repositioning UA within commons-oriented legislative framework for its governance structures?
- How does this shift impact stakeholder relationships, particularly between citizens and local authorities?
- How does this case study deepen our understanding of collaborative governance in urban commons?

Answering these questions will shed light on the complexities and opportunities of governing UA as commons, contributing to broader debates on participatory urban governance, UA management, and social-ecological transitions toward more sustainable urban food systems.

The article is structured as follows. The first section situates UA within the theoretical framework of urban commons and urban commons governance. The second section outlines the research methodology used in the study, while the third section presents and analyzes the case study, with a focus on the dynamics of the shift towards a commons-oriented thinking. Finally, the discussion and conclusion sections offer insights drawn from the case study and make recommendations for applying the commons framework to other collective-oriented projects.

2. Theoretical Background

2.1. Understanding Urban Agriculture as Urban Commons

UA can take different forms according to the geographical and political context where it takes place. Contemporary UA initiatives encompass a wide range of typologies, including allotment gardens, home gardening, community and collective gardens, guerrilla gardening, roof gardens, vertical gardens, and aquaponics (Certomà et al., 2020; Dubová et al., 2020), a diversity that mirrors how urban residents adapt UA to their specific needs (Gómez-Villarino et al., 2021).

Recent empirical work by the European Forum on Urban Agriculture supports this understanding through a classification derived from a 2021 survey of 112 UA initiatives across Europe, complemented by expert interviews and literature analysis (Jansma et al., 2024). This classification resolves longstanding ambiguities between urban *farming* (commercial production-oriented systems) and urban *gardening* (non-commercial, leisure-focused activities), offering six distinct categories: Urban Farms, Community Parks, DIY Gardens/Farms, Zero Acreage Farms, Social Farms, and Community Gardens. Operational parameters such as spatial organization, production scale, and social objectives provide systematic criteria for distinguishing initiatives (Jansma et al., 2024).

Within this classification, community gardens represent a specific category defined as open spaces managed by local communities for food/flower cultivation (Guitart et al., 2012) or as collectively managed plots fostering social interaction (Jansma et al., 2024). This article specifically focuses on community gardens that include a social function and that can be classified as community-based initiatives (CBIs). CBIs are defined as “a form of self-organization where citizens mobilize resources to collectively define and carry out projects aimed at providing public goods or services for their community” (Igalla et al., 2021, p. 805). CBIs usually operate within institutionalized regulatory frameworks and are often conceptualized as being “co-produced” or “co-created” by various participants, including citizens and other societal actors such as municipal administrators (Igalla et al., 2021).

The community-based aspect within an institutionalized framework mirrors the inherently hybrid private-public dimension of UA. This aspect is a defining feature of “urban commons.” Rooted in Ostrom’s work on common pool resources, the term “commons” refers to goods and services that are accessible and divisible (Ostrom, 1990). *Urban commons* more specifically refer to shared material and resources that contribute to individual and collective well-being in cities and are built around themes of participation, collective action, and self-organization (Feinberg et al., 2021). While Elinor Ostrom’s design principles for managing common-pool resources provide foundational insights into collective action and institutional arrangements, urban environments introduce complexities—such as fluid communities, fragmented ownership, and dense regulatory frameworks that require significant adaptations of her framework (Meerkerk, 2024). More specifically, while Ostrom’s work had already engaged with urban contexts (Nagendra & Ostrom, 2014), urban commons scholars have since expanded her theories to address the distinct challenges of cities, such as the privatization of urban resources, the role of digital tools in fostering participation, and experimentation with legal and property structures (Foster & Iaione, 2019). They also emphasize co-production and co-creation as essential elements of inclusive governance, highlighting the need for flexible and participatory systems to manage urban commons effectively (Ela, 2016; Foster & Iaione, 2019).

A distinctive shift in the urban commons literature is the tendency to replace Ostrom's "polycentric governance" (1990) with the broader term "collaborative governance": while both concepts recognize the importance of collaboration and the involvement of multiple actors, they differ in their scope and emphasis. Polycentric governance specifically addresses the management of common-pool resources, highlighting the autonomy and self-governance of local units. On the other hand, collaborative governance is a broader concept applicable across multiple domains of public administration and emphasizes inclusive, deliberative decision-making processes that involve diverse stakeholders in addressing public challenges and pursuing shared goals (Foster & Iaione, 2015). In essence, while polycentric governance seeks to facilitate dialogue among different autonomous units, collaborative governance seeks to establish a hybrid decision-making system that integrates diverse voices, also contributing to blurring the boundaries between citizens and state interests (Mansfield & Mendes, 2013).

UA can be understood as an "urban commons" because many UA initiatives are driven by the aspiration to collectively reclaim and manage urban spaces for the common good, a core principle of urban commons thinking. Community gardens, in particular, often emerge in response to the lack of democratic access to and use of public spaces, or a lack of opportunities for social interaction (Rogge & Theesfeld, 2018). To foster a sense of ownership and accountability, responsibilities within community gardens are usually distributed and shared, much like the stewardship practices found in commons governance models. As such, UA projects, and especially community gardens, can be seen as lived experiments of urban commons (Eizenberg, 2012; Follmann & Viehoff, 2015); they entail the use of shared resources that connect various stakeholders, promote social cohesion and community well-being within a collectively maintained space, and are mediated through collective stewardship (Eizenberg, 2012).

This article argues that UA initiatives, particularly community gardens operating as CBIs, exemplify the need for urban commons scholarship to reinterpret Ostrom's theories through the lens of collaborative governance. Despite the resonance between UA practices and the urban commons literature, the governance dimension of community gardens has rarely been explored from this theoretical perspective (Follmann & Viehoff, 2015). Therefore, understanding how the urban commons governance framework applies to UA may provide valuable insights into the governance of UA initiatives.

2.2. Urban Commons Scholarship: A Focus on Collaborative Governance

Governance is a key topic in the broader literature on commons. Ostrom's work gives central importance to governance patterns to understand how resources are commonly accessed, focusing in particular on polycentric governance patterns, which emphasize decentralized decision-making and community self-organization (Ostrom, 2010). Polycentric governance acknowledges the importance of multiple, overlapping centers of authority, allowing for diverse local conditions to be addressed through adaptive management and collective action (Ostrom, 1990, 2009, 2010).

Urban commons scholars like Foster and Iaione (2019) have reconceptualized governance through collaborative models that integrate Ostrom's institutional analysis with public administration theory. Ansell and Gash (2008) describe collaborative governance as "a governing arrangement where public agencies directly engage non-state stakeholders in a formal, consensus-oriented, and deliberative decision-making process to make or implement public policy or manage public programs or assets" (p. 544). Expanding on this

definition, Emerson et al. (2012, p. 2) define collaborative governance as the processes and structures of public policy decision-making and management that engage people across public agencies, levels of government, and different sectors to accomplish a public purpose that could not be achieved otherwise. They emphasize the broad nature of collaborative governance, allowing for various applications and scales. Both Ansell and Gash (2008) and Emerson et al. (2012) provide overarching definitions that encompass different forms of collaboration, such as co-participation, co-creation, and co-management of services.

A central concept driving the argument for collaborative governance is the notion of a “democratic deficit,” which suggests that citizens’ preferences are better expressed through participatory approaches rather than top-down mechanisms (Gustafson & Hertting, 2017). Furthermore, collaborative governance is also presented as a way to address the need for collaboration in contexts characterized by specialized and distributed knowledge and complex institutional infrastructures. This form of governance is therefore seen as an innovative democratic mechanism that promises greater inclusion and responsiveness (Gustafson & Hertting, 2017).

Gustafson and Hertting (2017) further identify three perspectives on the motivations driving collaborative governance approaches: interest-based, deliberative-integrative, and administrative-functional. In the interest-based view, participatory arrangements are seen as political arenas for self-expression, allowing marginalized groups to have a voice and influence policy. The deliberative and integrative view, on the other hand, frames collaborative governance as an arena for collective reasoning, where participants engage not only to express marginalized interests but also to shape a shared understanding. This perspective emphasizes the possibility for participants to change their beliefs through dialogue (Gutmann & Thompson, 1996). Finally, the administrative or functional view focuses on enhancing the capacity to take action by mobilizing knowledge, with participants engaging in collaborative governance to strengthen their ability to effectively influence outcomes (Gustafson & Hertting, 2017). In short, collaborative governance is seen as an alternative governance approach that addresses the democratic deficit, expands inclusion, and enhances responsiveness (Bäckstrand, 2004).

Additionally, collaborative governance can manifest in the forms of co-production or co-creation. Although the terms are frequently used interchangeably (Brandsen & Honingh, 2016; Leino & Puumala, 2021; Voorberg et al., 2015), Bentzen (2022) distinguishes between these concepts by noting that co-production generally involves intensive user involvement mainly in the later stages of a process, whereas co-creation emphasizes a participatory, capacity-enhancing approach from the outset. Co-creation also emphasizes innovation and creativity more strongly, highlighting its potential to drive significant change in the roles and relationships between stakeholders (Leino & Puumala, 2021).

2.3. The Roles of State and Society in Urban Commons Governance

The relationship and respective roles of state and society are an important aspect of urban commons governance, one that is particularly relevant to this study. Urban commons governance scholarship emphasizes societal transformation through the way public space is utilized, often highlighting the blurring of roles among the state, market, and civil society (Mansfield & Mendes, 2013, p. 40). Hardt and Negri (2009) argue that the commons exist beyond the traditional public-private dichotomy, offering an alternative political and organizational framework that challenges conventional governance structures (as cited in Follmann & Viehoff, 2015).

In the context of UA, this hybridity introduces specific tensions, particularly between maintaining the goals of grassroots activism driving community engagement, and the institutionalization that often follows. Another key issue is advancing community-driven agendas without succumbing to neoliberal co-optation. A recurring theme when discussing the relationship between the city and its citizens in the context of UA is how municipalities often leverage UA for its potential to produce exchange-value, aligning with neoliberal agendas that promote public-private partnerships in the management of urban spaces (Ernwein, 2017). In this process, local governments may reduce their direct involvement, outsourcing responsibilities to private entities or volunteers (Certomà et al., 2020). This blending of top-down and bottom-up approaches also creates a governance model where citizen engagement is both encouraged and constrained through regulations, reflecting a complex power interplay between the state and civil society (Halloran & Magid, 2013). Certomà and Giaccaria (2024) further argue that the boundaries between state and society become increasingly blurred, with UA offering a space where collaborative action can limit neoliberal co-optation while promoting inclusivity and alternative forms of urban management.

Moreover, collaborative governance in the sense of people's engagement across public agencies and levels of government (Emerson et al., 2012) is particularly relevant to UA, as authorities hold the authority to approve the development of built infrastructure. Partnerships with institutions are crucial for urban commons, especially when commons need to assemble material infrastructure (Bianchi et al., 2024). This creates a dynamic where municipalities enable, regulate, and support UA by engaging in complex partnerships through different indirect policy instruments and governance arrangements (Halvey et al., 2021). Bianchi et al. (2024) claim that these interactions between citizens and local governments not only help urban commons secure their material infrastructure, which needs formal approval by the state, but also enhance the political action and agency of commons.

Feinberg et al. (2021) describe this dynamic as a source of tension: although commoning is seen as a demand for certain civic rights and an expression of collective identity, various studies show that the intervention of a central authority for the legitimization of—or assistance to—the common is often necessary. In Western societies, where state and market are essential entities, commoning may function more effectively through the coordination of a governmental authority (Feinberg et al., 2021).

While this review has explored the alignment of UA with urban commons principles and collaborative governance frameworks, there remains a gap in understanding how these theoretical concepts take shape as concrete policy shifts. Specifically, there is limited research on how the reclassification of UA as a commons within legislative frameworks can signify a shift in governance and stakeholder dynamics. This study addresses this gap by examining the case of Rome's UA regulation and its proposed integration into the broader Regulation for the Shared Administration of Common Goods. By analyzing UA's regulatory evolution, the research offers insights into the practical application of urban commons and collaborative governance theories to UA management.

3. Methods

This article uses a case study approach, which facilitates the exploration of the complexities and dynamics surrounding UA regulatory developments and allows for the detailed examination of contextual factors, interactions, and processes that provide deeper insights into UA governance. The methodology includes

archival analysis and semi-structured interviews with key stakeholders involved in the development of the regulation of UA in Rome.

Relevant information on the case study was first gathered through an extensive review of both scientific and gray literature, such as the texts of Resolution 38/2015 and of the new 2024 October “Delibera,” reports from EU-funded projects, and other relevant sources available online, such as the Facebook groups of UA practitioners.

Subsequently, fourteen semi-structured interviews were conducted in 2023 to gather primary data on the practices and challenges faced in the governance-building process. The target group of interviewees consisted of people involved in the institutionalization of UA between 2009 (the date of the first community garden in Rome as reported by Celata & Coletti, 2018; Certomà, 2016) and May 2023. The sample included EU-project officers, local administrators, gardeners, and “mediators”—namely actors belonging to UA associations involved in mediating between administrations and gardeners.

Although the interviews and data collection focused on individuals and initiatives who may not represent the full range of experiences of the stakeholders involved in the development of the regulation of UA in Rome, the intention was to select participants who had significant expertise and experience in the field, to provide valuable insights and in-depth perspectives. Similarly, all the gardens selected have been in operation for at least five years, allowing for the analysis of established experiences, and all belong to the “community garden” classification. Community gardens are widespread across Rome, but this study specifically focuses on gardens in the South/Southwest area of the city (see Figure 1), where the first EU-funded garden was created, and the first community garden was officially established in 2009.

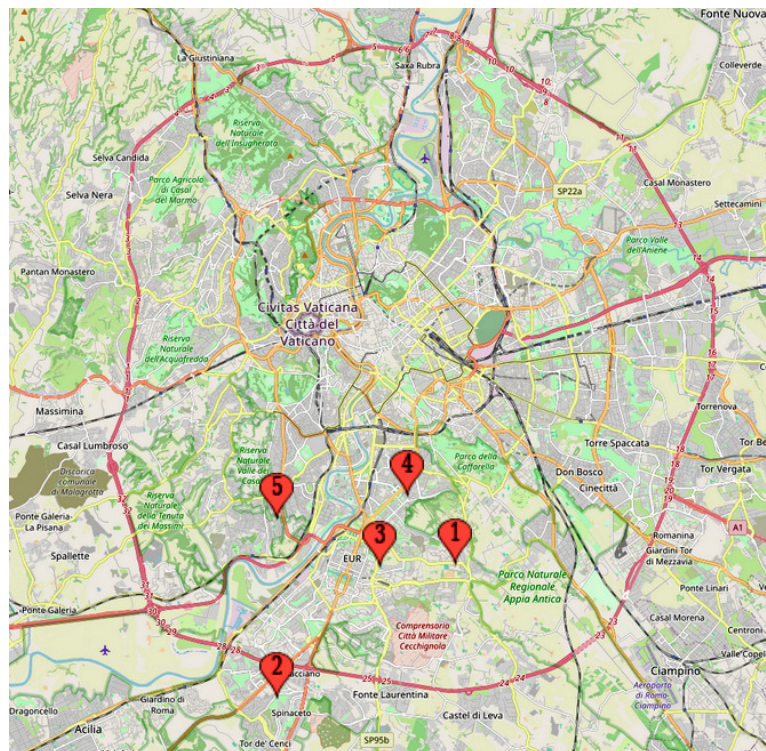


Figure 1. Gardens visited in Rome, Italy (pins added by authors in Districts viii, ix, xi). Source: OpenStreetMap.

Four of the interviews were conducted during on-site visits to five UA gardens, while the other ten were conducted online. All interviews lasted between one and two hours and were recorded with the participants' consent. The interviews began with a warm-up question to gather participants' profiles and roles in the institutionalization of UA and continued with specific questions addressing the new legislative developments of urban commons in Rome. The interviews were then transcribed, translated into English and thematically analysed with the support of MAXQDA. A supplementary analysis was conducted with MAXQDA's MAXDictio's features, particularly word frequency, to identify which words were novel in the proposal of the 2024 regulation, and the "keyword in context" function, to analyze different framings of specific keywords.

4. Case Study: Urban Agriculture Regulation in Rome, Italy

The case of UA in Rome is an entry point to examine the emergence of novel governance patterns from a commoning perspective. First, the history of UA in Rome reflects the strong connection between the city and its surrounding countryside (Cavallo et al., 2016). Rome is currently the largest European municipality in terms of rural land, which covers 40% of the municipal territory (Cavallo et al., 2016). Moreover, a significant portion of the city's landscape consists of agricultural areas interspersed within the urban fabric, with green spaces accounting for 68% of the total urban surface. Many of these green spaces, however, are neglected and have become sites of illegal trafficking and dumping (Certomà, 2016).

Rome's urban structure is highly informal, providing different narratives about the development of urban gardens and the increasing institutionalization of this movement. Although UA has long been present in Rome, its informal nature complicates efforts to quantify the phenomenon. Individual allotments have existed in the city at least since World War II to fight food insecurity in the city (Certomà, 2016). Community gardens, on the other hand, are more recent, dating back to the second half of the 2000s (Celata & Coletti, 2018). The first community garden is reported to be Orti Urbani Garbatella, officially established in 2009 (Celata & Coletti, 2018; Certomà, 2016).

Since the early 2000s, there has also been a progressive institutionalization of UA, which culminated in the 2015 Shared Regulation for the Management of Urban Gardens. The 2015 regulation was recognized as a best practice by the EU (URBACT, n.d.-a) and has been transferred to other countries through the project "RU:RBAN" (URBACT, 2019), establishing Rome as a pioneering city in UA governance. EU projects were particularly relevant for UA in Rome, with at least 15 projects on this theme (Orti in Comune, 2021, retrieved in May 2023). A new regulation proposal, released in November 2022 and approved on October 25th, 2024, chose to position UA within the legislative framework of urban commons, reflecting new developments in governance approaches. The following sections provide a more detailed analysis of the phases leading to the 2024 commons-oriented regulatory framework for UA in Rome.

4.1. The Path to Institutionalization: From the 1990s to 2010

The evolution of UA in Rome, particularly the transition from informal practices to formal recognition, illustrates the complexity and challenges of its governance. Interview IX recounts the origins of Orti Urbani Garbatella, Rome's first community garden, which started in the 1990s as an act of illegal occupation to resist speculative building projects. This occupation was led by a group of "weekend gardeners, without experience or permits" (Interview IX), who reclaimed concrete-covered land. Their efforts reflect a broader

trend in UA at the time, when most urban gardens were considered illegal and operated outside formal frameworks, largely overlooked by local authorities (Interviews III, IV).

Interviewees also stressed that the early stages of UA initiatives in Rome were marked by bureaucratic obstacles and limited resources, and described the administrative processes required to approve UA projects as slow and cumbersome (Interview VIII). Despite Rome's rich green heritage, urban gardens have historically not been a priority for local administrations, who have tended to focus on more pressing issues (Interview XII), and the municipal administration struggled to provide sufficient support, as staff reductions hindered the basic maintenance of green spaces (Interview IX). These challenges supported the development of grassroots movements, with citizens forming associations to fill the gaps in local government activities (Interview VI).

During the 2000s, Rome's UA movement began to institutionalize; while some gardens, like Orti Garbatella, were born out of political resistance, others actively sought collaborations with local authorities from the beginning (Interview III; Certomà & Martellozzo, 2019), leading to much discussion around the impact of policies and institutions on community gardening, particularly concerning how they could support or hinder these projects (Celata & Coletti, 2018).

The journey towards the creation of the regulation of UA in Rome also began in the early 2000s, as urban gardening gained momentum and started seeking institutional recognition. In response to the growing interest in community gardening, the City of Rome aimed to establish common rules for food safety and working conditions. In 2002, it created the Municipal Unit for Urban Gardens and Allotments (Servizio Orti Urbani) within the Department of the Environment (Celata & Coletti, 2018; Interviews IV, V). The goal of this unit was to map existing allotments and develop guidelines for their management (Interview III). Although the map was completed in 2006, it was never published due to concerns that formalizing gardens might impede future urbanization plans (Interviews IV, V, VII).

During this period, the concept of urban gardening also evolved to include more collective/community gardens. However, in 2008, the right-wing mayor Giovanni Alemanno moved—for political reasons—the Municipal Unit for Urban Gardens and Allotments to the Department of Agriculture, emphasizing the agricultural significance of community gardens rather than their community-building character (Celata & Coletti, 2018). In 2010, the municipality established community allotments in Via della Consolata, with an emphasis on reconnecting people, including children, to the land. This development signaled a growing interest of the municipality in getting involved or directly participating in UA processes. However, the city also seemed to frame the gardens as a way to externalize some maintenance costs and reduce municipal maintenance burdens, as per Interview III:

In the vegetable gardens of Vicolo Silvestre, via Consolata, created by Alemanno with 500 thousand euros, the municipality offers help in return for help. The park was wild, the gardeners managed it, and they had to guard the park. (Interview III)

4.2. 2010–2015: Resolution 38 on Urban Agriculture

After 2010, there was a growing awareness of the need to regulate urban gardening in Rome. Although illegal occupation was still common, four of the five gardens in this study had obtained permission from private owners or were linked to EU-funded projects. The shift toward formal recognition was strongly supported by civic associations such as Zappata Romana, which has mapped UA initiatives across the city and facilitated communication between gardeners, authorities, and other stakeholders (Interviews III, VI). As of October 2024, the map included 218 active gardens, demonstrating the growing scale of the movement. Zappata Romana's mapping and networking efforts have helped raise awareness about these grassroots initiatives, some of which were previously unaware of one another's existence (Interview VI). The increased network organization and collaboration has also increased the influence of urban garden initiatives, allowing them to negotiate more effectively with municipal authorities (Certomà et al., 2020). Interview XIII captures this transition, noting that the shift from "abusive to regulated" UA in Rome reflects a growing awareness among citizens of their ability to work within formal structures, leading to the establishment of shared regulations.

In the early 2010s, the Rome also participated in three EU-funded projects focused on community gardening strongly promoted by Risorse per Roma, an in-house company of the City of Rome. Mayor Ignazio Marino, elected in June 2013, actively promoted community gardening with a focus on reconnecting citizens with nature and improving public spaces, shifting away from the previous administration's emphasis on food production (Celata & Coletti, 2018). According to Celata and Coletti (2018), Marino's left-wing orientation and commitment to sustainability issues led him to emphasize the social and environmental benefits of community gardening, rather than its rural or agricultural aspects as the former right-wing administration had done. Marino saw these initiatives as a way to encourage citizen activism and improve urban spaces.

In 2014, eleven grassroots associations collaboratively developed the "Guidelines for the Management of Community Allotments and Gardens in Rome" (Interview III). These guidelines, inspired by the UA regulation of the city of Marseille (Interviews IV, IX), were presented to the City Council with the aim to officially recognize community gardening as an instrument for advancing environmental sustainability and societal well-being (Celata & Coletti, 2018). Amendments to Rome's governance are handled through multiple layers of review and decision-making. First, a proposal for a new resolution is developed by stakeholders such as citizens, municipal authorities, and committees. Each of Rome's 15 Districts (Municipalità) then reviews the proposal and provides feedback. The proposal is then forwarded to the Giunta, the city's executive body, for discussion and voting. After the Giunta's decision, the proposal proceeds to the Capitol Assembly (Assemblea Capitolina), Rome's highest legislative body, for debate, amendments, and final approval.

The Regulation for the Assignment and Management of Municipal Green Areas, Urban Gardens and Allotments was eventually approved by Mayor Marino's administration in July 2015 as Resolution 38 of 2015, filling a policy vacuum (Celata & Coletti, 2018). The terms of this 2015 UA regulation are the result of years of roundtable discussions involving most of the gardens in Rome, which organized themselves through the group "Orti in comune" (Gardens in Common). These rules were first discussed and conceived as internal regulations for the gardens themselves (Interviews XI, XII) and were crafted by gardeners with several aims in mind. One of the major aim was to provide widely accessible public space for social cohesion through food production:

The garden uses agriculture as a tool, but the ultimate goal of the urban garden is to create communities that have in common a certain spirit from a certain predisposition that they use as a public square. Also, many come here after their shift or on weekends, so we have thought of facilities that allow them to grow food quickly as a hobby. There's Wi-Fi for those who want to study, and a grill. (Interview I)

The regulation has allowed easier access to the gardens to the weakest [people] through specific access criteria. (Interview VII)

Another major objective was to foster institutional dialogue and enhance legitimacy: As Interviewee XII notes, the existence of a regulation allows community gardens to be recognized as reliable, while Interviewee I highlights that a goal of the process was to establish non-adversarial relationships with the municipality. This legitimization process and the increased collaboration with institutions also required a clearer definition of the respective roles, rights, and duties of the State and citizens. A further aim was to grant greater autonomy to non-profit organizations to enhance their capacity to contribute to public well-being. As Interviewee IV explains, "Resolution 38 allows citizens to contribute through the administration, to say, 'that territory hosts an illegal dump, give me the permission to save it from being toxic.'"

Overall, the purpose of Resolution 38 was to facilitate the emergence, diffusion, and formalization of community gardening in Rome. It offered public land for community gardening free of charge, signaling the municipality's commitment to supporting the practice, and designated the Environmental Protection Department (Civil Protection) as the entity responsible for defining the areas for urban gardening and monitoring their condition. The areas designated as urban farms were selected based on their physical and ecological characteristics, following the Land Use Plan of Rome. The municipality also offered opportunities for specific agreements with citizens or associations already informally using public areas for UA.

Associations could apply for a six-year renewable lease for the use of a designated area and were responsible for implementing and managing the urban garden project. They also had the responsibility of subdividing the land into smaller plots and ensuring that citizens took care of them. Plot allocation priorities were based on specific criteria defined by the association, e.g., unemployment or age. The responsibilities of Associations also included opening and closing the gates of the garden area according to agreed-upon times, conducting soil and irrigation water analysis before food production, and maintaining common areas and furnishings. Plot holders were responsible for directly managing and cultivating their assigned plot, and temporary replacements were allowed only under certain conditions. The association held the authority to revoke plot allocations in case of non-compliance or if the holder transferred to another city. The municipality retained the right to revoke assignments and terminate the relationship with the association in case of serious breaches or reasons of public interest.

The use of public land for free community gardens aligned with the city's master plan, but the construction of permanent structures was prohibited, and the produce could not be commercialized. Private groups or cooperatives managing urban gardens also had to follow specific rules, including the prohibition of pesticides, chemical fertilizers, and GMO seeds. The regulation emphasized the role of community gardens in protecting the environment, fighting poverty and social exclusion, and educating young people. Therefore, managing associations were responsible for social inclusion activities, environmental initiatives, waste management, and promoting organic practices.

4.3. 2015–2024: *From Conflict to Collaboration*

The first attempt to revise and adapt Resolution 38 occurred during the tenure of Pina Montanari, Councilor for the Environment under Mayor Raggi (Interview III). After Montanari's resignation, only one further meeting was held in November 2019. Despite this limited engagement, a completely revised regulation marked by a strong administrative centralization and a much-diminished role of citizen initiatives was drafted and sent to District councils for revision.

The drafting process for this new regulation faced criticism for its lack of consultation and controversial changes, particularly regarding garden assignment criteria. The draft was published for review on August 6, 2020, during the holiday season when many gardening groups were less active (Interviews VI, IX). Although the Environmental Commission reviewed the proposal again in September and October 2020 (Orti in Comune, 2020a, 2020b, accessed May 2023), the proposal was eventually canceled due to legal issues (Interview VII), leaving Resolution 38 as the standing regulation.

Gardeners strongly opposed the revised regulation's expectation that gardens should follow top-down criteria that had never been subject to public discussion. They argued, for example, that it was unfair to introduce fees after years of voluntary efforts spent revitalizing neglected land, and that a common discussion was needed to clarify the reasons behind this choice. As noted in one interview:

Raggi saw political enemies in the pool of gardeners. The allocation of land was seen as something coming from above, because the push from below was seen as an appropriation of public land. (Interview XIII)

This conflict led to growing awareness among citizens of their key role in taking care of the “bene comune” (common good), as described in Interview IX: in their fight to have their work recognized, and not to be required to pay fees after years of voluntary labor to restore neglected land, volunteers began to realize that their role extended beyond a personal engagement in gardening. They were contributing to the common good, advancing the welfare of the broader community.

Alongside this shift in awareness, the regulation was revised through several meetings, where the principle of “horizontal subsidiarity” was also incorporated for the first time. This principle, championed by Labsus—an association for the promotion of urban commons in Italy (Ciaffi, 2020)—acknowledged the active role of citizens in addressing gaps left by administrations (Interviews IX, X) and emphasized the importance of empowering communities to act in the public interest and collaborate with institutions. The principle of horizontal subsidiarity is enshrined in Article 115 of the Italian Constitution and recognizes both the central role of citizens in taking care of the collective good, as well as institutions' responsibility to provide the framework and resources for citizens-led initiatives (Ciaffi, 2020). The principle challenges the approach of delegating and privatizing public functions by emphasizing collaboration and community participation in managing public spaces. It also emphasizes the community's ability to take part in urban decision-making and exercise power for the common good, repositioning citizens' role from that of mere voters to that of active participants in shaping their communities (Ciaffi, 2020).

Interviewee IX describes this change as a departure from neoliberal logics, highlighting how it signaled a move toward governance arrangements in which public entities and civic associations manage shared resources on more equal terms, challenging the asymmetry and one-sidedness often associated with neoliberal logics. This approach exemplifies a governance model that is neither bottom-up nor top-down, nor involves multiple centers of decision-making, but is collaborative and deliberative. The municipality acknowledges its failure in managing public spaces, while citizens express their willingness to manage them collectively (Interview I). This collaborative pact aims to achieve a balanced management approach where both parties commit to mutually agreed-upon rules, ensuring accountability on both sides.

Interview I also highlights that the collaboration pact differs from a traditional contract, as it is jointly formulated, with both parties determining their terms and the actions to be taken. Within the framework of horizontal subsidiarity, UA gardens can be considered a type of commons (Interview I), and the transition from informal land occupation to a regulated state itself can be viewed as a cooperative process. Interview XII stresses that collaborative pacts are not simply about granting land to citizens but represent a mutual commitment between citizens and institutions to undertake specific actions (Interview XII).

In those years, stakeholder groups also advocated for linking the previous Resolution to the Commons legislative framework, allowing for the recognition of the subsidiarity relationship between those who regenerate public spaces and the administration, thus ensuring that responsibilities and benefits are shared equally (Interview III). Under this arrangement, the administration enters a collaboration pact for the shared management of green spaces designated as urban community gardens. The land is then allocated to an association that signs the pact and submits a project proposal to the City Council outlining its intended use. These pacts enable the provision of economic support, tools, partnerships, and other resources needed for managing the space, suggesting a shift from one-way assistance to mutual aid in the stewardship of public spaces. The administration commits to provisions such as insurance coverage for gardeners and guaranteed water access; in other words, gardeners maintain the plots, while the city provides services and infrastructure (Interviews I, XII).

In November 2022, after nine months of revision of the regulation of UA during which 11 public meetings (called “Urban Local Groups” according to the URBACT methodology; URBACT, n.d.-b) were held to discuss amendments, Orti in Comune shared the proposed new regulation for the urban community gardens of Rome with the Councilor for the Environment and the President of the Capitoline Environment Commission. Activists were also advocating for the establishment of a permanent consultative body, the “Consulta degli orti urbani” (Permanent consultation body for urban vegetable gardens), to address issues relevant to community gardens and allotments and maintain dialogue with the city administration, transcending changes in political leadership (Interview III).

On the 25th of October 2024, the regulation was unanimously approved by the Capitoline Assembly of Rome (City of Rome, 2024b). According to the website:

In defining the new regulations, the City of Rome’s objectives include developing community resilience, promoting *healthy and conscious food consumption*, *enhancing the green and agricultural heritage*, *the urban landscape*, encouraging good practices related to the recovery, *recycling and reuse of natural resources* and creating paths of participation and active citizenship as opportunities for

social aggregation that foster interpersonal relationships, *knowledge and enhancement of the urban environment*, developing moments of sociability and meeting aimed at integration and social inclusion. (City of Rome, 2024b, translated from Italian)

A comparison of the texts of Resolution 38 and the new regulation reveals both recurring themes and notable modifications. MAXQDA's Word frequency function shows that “commons” and expressions like “intergenerational encounters,” “co-governance,” “collaboration,” “co-management,” “cooperate,” and “co-planning” appear for the first time in the new regulation, signaling a discursive shift toward more participatory and commons-oriented governance frameworks.

Furthermore, the concept of “awareness” emerges as a key theme in relation to the revision process, as it was consistently mentioned across all interviews. Awareness was built or developed during exchanges and interactions between different stakeholders, and the methodology employed by the EU-funded (URBACT) project RU:RBAN of bringing stakeholders together through the “Urban Local Group” meetings was key to fostering this awareness. According to Interviewee VII, “the urban local group increased the awareness and maturity of all people involved in the process,” a sentiment echoed by Interviewee VI, who emphasized that “it was necessary to sit at the table, and whoever was behind the table understood other perspectives.” Or, as elaborated upon by Interviewee XIV:

The URBACT method coordinated by Risorse per Roma was very important because it provided rules and a democratic method for conducting local meetings where all stakeholders are involved. This goes hand in hand with a coherent policy and the co-creation process, which applies the ‘collaboration agreements for the care of green areas’ based on the principle of horizontal subsidiarity.

In conclusion, this section has described the continuous evolution of institutional arrangements employed in the governance of UA in Rome, from informal grassroots initiatives to the current commons legislative framing adopted in the regulation approved in October 2024. The following section explores the governance implications of this commoning process.

5. Discussion

The development of UA in Rome and the shift in how it is conceptualized offers a vivid illustration of how urban commons theories can take shape in practice. The evolution of institutional arrangements connected to UA, particularly through the creation of the 2015 regulation and its subsequent changes until the 2024 version, shows the collaborative governance processes that are foundational to urban commons. This progressive institutionalization not only structures UA as a commons-oriented land-use strategy but also demonstrates how such frameworks legitimize the role and actions of grassroots movements during political contestation.

In this discussion section, we first examine how the theoretical principles outlined in the literature review are reflected in the Rome case study. We then elaborate on the commoning of UA from a legislative standpoint, addressing how this helps answer the three research questions:

- What are the implications of repositioning UA within a commons-oriented legislative framework for its governance structures? (RQ1)
- How does this shift impact stakeholder relationships, particularly between citizens and local authorities? (RQ2)
- How does this case study deepen our understanding of collaborative governance in urban commons? (RQ3)

5.1. Understanding Urban Agriculture as Urban Commons

From its 2015 version onward, the regulation has conceptualized UA as a commons by going beyond a narrow focus on land use for food production. It has adopted a multifunctional perspective that encompasses a wide range of objectives, such as food security, environmental sustainability, social cohesion, and economic development. This approach aligns closely with the theoretical framework of urban commons, which views shared resources as serving both individual and collective well-being within urban environments (Feinberg et al., 2021). Framing UA within the commons approach contributes to a redefinition in the understanding of public goods, positioning grassroots activism as a recognized contributor to societal progress, rather than just as an oppositional force. This aligns with the description of CBIs provided in the theoretical framework.

The governance of UA in Rome also reflects the state-society co-creation dynamic in urban commons scholarship. Grassroots movements through which citizens come together to address gaps in local government support highlight the self-organizing and participatory dimension of urban commons; at the same time, the collaboration between citizens and local administrators in institutionalizing UA demonstrates the blurring of roles between the state and civil society (Mansfield & Mendes, 2013). This dynamic is evident in Rome's UA regulation: while responsibilities such as the maintenance of urban gardens are shared by both parties, the principle of horizontal subsidiarity—enshrined in the Italian Constitution and a core tenet of the 2024 regulation—places greater obligations on local administrations in exchange for citizens' collective stewardship of commons. The principle also formalizes the collaborative pact between the government and its citizens, reflecting a shared stewardship of public spaces (Foster & Iaione, 2015).

Collaborative governance theories highlight the collaborative and deliberative nature of this state-society co-creation. By recognizing shared needs and responsibilities, UA governance becomes a collaborative pact between citizens and institutions, where both parties contribute to managing the public good, blurring individual and collective aims. This collaboration addresses a democratic deficit, expands inclusion, and enhances responsiveness, as seen in Bäckstrand's (2004) descriptions of collaborative governance. Given that, as noted in earlier sections, co-creation emphasizes a participatory, capacity-enhancing approach from the outset (Leino & Puumala, 2021), the case of UA in Rome can indeed be understood as a process of co-creation. This is reflected mainly in the change in the relationship between the actors involved due to adaptive and continuous collaboration.

The study, however, also shows the tensions between grassroots activism and the institutionalization of urban commons. For instance, the city's framing of community gardens as a tool to externalize maintenance costs, albeit while providing support, illustrates the complex power dynamics between state and civil society (Certomà & Giaccaria, 2024). While this partnership reflects the co-creation of governance, it also highlights

the challenge of navigating neoliberal logics within a commons framework. Still, the perception of community gardens as spaces appropriated by citizens, and the attempts to formalize their collective use, can be seen as a pushback against neoliberal urban management, which often commodifies and privatizes public space (Ernwein, 2017).

5.2. Legislative Reframing: Awareness, Horizontal Subsidiarity, and Collaborative Governance

Rome's UA regulation process illustrates how grassroots *awareness* of collective stewardship has catalyzed legislative innovation, transforming commoning from informal activism into a codified framework for co-governing urban resources. As citizens shifted from occupying neglected spaces to advocating for recognition of their role in maintaining the "bene comune" (common good), their efforts underscored the realization that commoning transcends individual action, constituting a *public good* that requires institutional reciprocity. This awareness, articulated in many of the interviews, propelled the adoption of horizontal subsidiarity, a principle enshrined in Italy's legal framework (Article 118) which redefines citizen-state relations by mandating collaborative governance. By embedding this principle into the 2024 regulation, Rome's policymakers acknowledged that urban commons thrive not through privatization or state control, but through shared responsibility between institutions and organized communities.

Regarding the implications for governance structures (RQ1), the legislative reframing of UA as a commons reconfigures governance architectures by replacing hierarchical oversight with collaborative pacts. These pacts, co-designed by citizens and municipalities, formalize shared ownership of public spaces while distributing responsibilities. This aligns with Ostrom's principle of "collective-choice arrangements," but urban commons scholarship provides a more appropriate framework for capturing the complexity of contested urban land rights.

In relation to stakeholder relationships (RQ2), horizontal subsidiarity repositions citizens from petitioners to co-decision-makers, mitigating power asymmetries. Interviews reveal that Rome's UA groups initially viewed the municipality as an adversary. However, the regulation's collaborative pacts reframed this relationship: citizens gained negotiating power in exchange for formalizing their stewardship. This reciprocity echoes what Mansfield and Mendes' (2013) wrote on "blurring of state-society roles." At the same time, horizontal subsidiarity could also still be placed in broader debates about the neoliberal co-optation of commons (Ernwein, 2017), because while the city avoids privatization, it still externalizes maintenance costs to citizens.

Regarding the understanding of collaborative governance in urban commons (RQ3), Rome's case demonstrates that such collaborative governance hinges on two pillars. The first is legislative legitimization: horizontal subsidiarity provides a constitutional basis for citizen-led initiatives, transforming activism into a governance model. The second is reciprocal accountability, where collaborative pacts bind both parties to outcomes. The legitimization of urban commons governance during the political struggle for the recognition of UA projects suggests that the framework is not only applicable to current efforts but also provides a path for future political initiatives striving for collective goals.

Furthermore, the reciprocal nature of these engagements highlights how UA in Rome has gone beyond the formal recognition of commons to become a shared societal norm. The collaborative nature of governance in this context is reflected in the structured meetings and exchanges between citizens and local governments,

which demonstrate how co-creation shapes policy and governance structures. This aligns with the theory that collaborative governance fosters shared responsibility in managing public goods and strengthens the blurring of state and citizen roles in governance (Mansfield & Mendes, 2013).

In sum, the governance of UA in Rome exemplifies the practical application of urban commons and collaborative governance theories. The case highlights how co-creation, horizontal subsidiarity, and reciprocal engagement play central roles in managing common goods, fostering inclusive and participatory governance, and promoting sustainable urban development. This approach not only reframes the UA movement but also opens up opportunities for other politically engaged projects to institutionalize as they strive to advance the public good. The everyday practices of UA governance contribute to shaping and reimagining urban public spaces in Rome, challenging traditional urban planning paradigms.

6. Conclusions

Local governments are increasingly promoting community self-organization and co-creation as mechanisms for delivering public goods (Igalla et al., 2021), and the growing interest in UA is developing alongside a growing interest in municipal public policy (Halvey et al., 2021). This study highlights the need for policymakers to adopt collaborative governance models for UA, with shared participation between public administrations and citizens in decision-making processes. Such models reflect the blurring boundaries between state and civil society, which foster a co-creative approach to managing urban spaces.

Central to this governance shift is the principle of horizontal subsidiarity, which calls for local governments to support UA by providing essential resources such as infrastructure, legal frameworks, and technical assistance. As demonstrated by this case study, structured co-creative processes such as roundtable discussions empower citizens and administrators to collectively shape governance systems, building a culture of reciprocal engagement and shared stewardship of urban commons. These collaborative mechanisms help to legitimize and sustain UA initiatives, enhancing their capacity to respond to changing urban needs. Moreover, the legitimization of grassroots movements during political contestation provides a new framework for the recognition and institutionalization of collective efforts aimed at advancing the public good.

The research findings show a shift from government-centric approaches to collaborative governance models in urban commons management. By emphasizing co-creation and horizontal subsidiarity, these models provide a solution to overcome the challenges of neoliberal urban management and commodification of public space, promoting a deeper integration of grassroots initiatives into institutional frameworks. This approach also advances a revolution in the conceptualization of public goods, positioning these grassroots projects as legitimate contributors to the public interest and sustainable urban development, rather than marginal opposition movements.

The study makes three theoretical contributions: First, to urban commons theory by demonstrating how grassroots initiatives can transition into institutionalized governance frameworks through co-creation. Second, to our understanding of how collaborative governance models can function using horizontal subsidiarity as a mechanism for balancing institutional oversight with community autonomy. Third, it challenges neoliberal urbanism paradigms by providing empirical evidence of non-commodified public space

governance. From a practical perspective, the findings offer policymakers replicable models for participatory decision-making and adaptive legal frameworks that recognize UA as critical urban infrastructure. The study also fills a research gap by reconstructing the story of UA regulation in Rome until the approval of the new regulation in October 2024.

Several limitations warrant consideration. First, the single-case study design limits generalizability across different political and national contexts, and the study also covers a limited number of gardens considering the size of Rome. Second, since the new regulation was only recently approved, this prevents an assessment of the long-term durability of the governance framework and the extent to which implementation will align with the regulation's declared objectives. Third, the analysis focuses on successful collaborations, making it difficult to assess power asymmetries in co-creative processes.

Future research should explore the long-term effectiveness of co-creative processes in UA governance and apply the urban commons framework to other collective projects evolving from political contestation to institutionalization. Moreover, it would be relevant to analyze the role played by conflict in co-creation and collaborative governance, not only between citizens and institutions, but also among gardeners themselves over competing visions of urban stewardship. Addressing these aspects will further strengthen our understanding of UA as a commons that benefits both communities and the environment.

Acknowledgments

This work partly results from research carried out in 2023 under the supervision of Prof. Ilona Otto (Wegener Centre, University of Graz) and Prof. Maharjan Keshav Lall (Hiroshima University).

Funding

This work was partly supported by JSPS KAKENHI Grant Number JP25K18315.

Conflict of Interests

The authors declare no conflict of interests.

References

- Ansell, C., & Gash, A. (2008). Collaborative governance in theory and practice. *Journal of Public Administration Research and Theory*, 18(4), 543–571. <https://doi.org/10.1093/jopart/mum032>
- Bäckstrand, K. (2004). Scientisation vs. civic expertise in environmental governance: Eco-feminist, eco-modern and post-modern responses. *Environmental Politics*, 13(4), 695–714. <https://doi.org/10.1080/0964401042000274322>
- Bentzen, T. Ø. (2022). Continuous co-creation: How ongoing involvement impacts outcomes of co-creation. *Public Management Review*, 24(1), 34–54. <https://doi.org/10.1080/14719037.2020.1786150>
- Bianchi, I., Pera, M., Calvet-Mir, L., Villamayor, S., Ferreri, M., Reguero, N., & Maestre Andrés, S. (2024). Urban commons and the local state: Co-production between enhancement and co-optation. *Territory, Politics, Governance*, 12(9), 1333–1352. <https://doi.org/10.1080/21622671.2022.2108491>
- Brandsen, T., & Honingh, M. (2016). Distinguishing different types of coproduction: A conceptual analysis based on the classical definitions. *Public Administration Review*, 76(3), 427–435. <https://doi.org/10.1111/puar.12465>
- Cavallo, A., Di Donato, B., & Marino, D. (2016). Mapping and assessing urban agriculture in Rome. *Agriculture and Agricultural Science Procedia*, 8, 774–783. <https://doi.org/10.1016/j.aaspro.2016.02.066>

- Celata, F., & Coletti, R. (2018). The policing of community gardening in Rome. *Environmental Innovation and Societal Transitions*, 29, 17–24. <https://doi.org/10.1016/j.eist.2017.09.002>
- Certomà, C. (2016). 'A new season for planning': Urban gardening as informal planning in Rome. *Geografiska Annaler: Series B, Human Geography*, 98(2), 109–126. <https://doi.org/10.1111/geob.12094>
- Certomà, C., Chelleri, L., & Notteboom, B. (2020). The 'fluid governance' of urban public spaces. Insights from informal planning practices in Rome. *Urban Studies*, 57(5), 976–995. <https://doi.org/10.1177/0042098018819734>
- Certomà, C., & Giaccaria, P. (2024). Dialogic practices of urban gardening in Rome: "Reading for difference" in social innovation. *Urban Geography*, 45(2), 258–280. <https://doi.org/10.1080/02723638.2023.2169487>
- Certomà, C., & Martellozzo, F. (2019). Cultivating urban justice? A spatial exploration of urban gardening crossing spatial and environmental injustice conditions. *Applied Geography*, 106, 60–70. <https://doi.org/10.1016/j.apgeog.2019.03.007>
- Ciaffi, D. (2020). *Servizi ibridi e condivisi, per prendersi cura dei Beni comuni*. LABSUS. <https://iris.polito.it/handle/11583/2928060>
- City of Rome. (2015). *Resolution 38 of 2015 (Regulation of Urban Agriculture)*. https://www.comune.roma.it/PCR/resources/cms/documents/Delib_N_38_17.07.2015.pdf
- City of Rome. (2024a). *Deliberation n.117 of 25th of October, 2024* https://www.comune.roma.it/web-resources/cms/documents/Nuovo_regolamento_Deliberazione_Assemblea_Capitolina_n._1172024.pdf
- City of Rome. (2024b). *Orti urbani, Assemblea approva nuovo regolamento*. <https://www.comune.roma.it/web-it/notizia/orti-urbani-assemblea-approva-nuovo-regolamento.page>
- Dubová, L., Macháč, J., & Vacková, A. (2020). Food provision, social interaction or relaxation: Which drivers are vital to being a member of community gardens in Czech cities? *Sustainability*, 12(22), Article 9588. <https://doi.org/10.3390/su12229588>
- Eizenberg, E. (2012). Actually existing commons: Three moments of space of community gardens in New York City. *Antipode*, 44(3), 764–782. <https://doi.org/10.1111/j.1467-8330.2011.00892.x>
- Ela, N. (2016). *Urban commons as property experiment: Mapping Chicago's farms and gardens* (SSRN Scholarly Paper No. 2744294). Social Science Research Network. <https://doi.org/10.2139/ssrn.2744294>
- Emerson, K., Nabatchi, T., & Balogh, S. (2012). An integrative framework for collaborative governance. *Journal of Public Administration Research and Theory*, 22(1), 1–29. <https://doi.org/10.1093/jopart/mur011>
- Ernwein, M. (2017). Urban agriculture and the neoliberalization of what? *ACME: An International Journal for Critical Geographies*, 16(2), 249–275. <https://doi.org/10.14288/acme.v16i2.1387>
- Feinberg, A., Ghorbani, A., & Herder, P. (2021). Diversity and challenges of the urban commons: A comprehensive review. *International Journal of the Commons*, 15(1). <https://doi.org/10.5334/ijc.1033>
- Follmann, A., & Viehoff, V. (2015). A green garden on red clay: Creating a new urban common as a form of political gardening in Cologne, Germany. *Local Environment*, 20(10), 1148–1174. <https://doi.org/10.1080/13549839.2014.894966>
- Foster, S., & Iaione, C. (2015). *The city as a commons* (SSRN Scholarly Paper No. 2653084). Social Science Research Network. <https://doi.org/10.2139/ssrn.2653084>
- Foster, S. R., & Iaione, C. (2019). Ostrom in the city: Design principles and practices for the urban commons. In D. Cole, B. Hudson, & J. Rosenbloom (Eds.), *Routledge handbook of the study of the commons* (pp. 1–24). Routledge.
- Gómez-Villarino, M. T., Urquijo, J., Gomez Villarino, M., & García, A. I. (2021). Key insights of urban agriculture for sustainable urban development. *Agroecology and Sustainable Food Systems*, 45(10), 1441–1469. <https://doi.org/10.1080/21683565.2021.1917471>

- Guitart, D., Pickering, C., & Byrne, J. (2012). Past results and future directions in urban community gardens research. *Urban Forestry & Urban Greening*, 11(4), 364–373. <https://doi.org/10.1016/j.ufug.2012.06.007>
- Gustafson, P., & Hertting, N. (2017). Understanding participatory governance: An analysis of participants' motives for participation. *The American Review of Public Administration*, 47(5), 538–549. <https://doi.org/10.1177/0275074015626298>
- Gutmann, A., & Thompson, D. (1996). Democracy and disagreement. *Ethics*, 108(3), 607–610.
- Halloran, A., & Magid, J. (2013). The role of local government in promoting sustainable urban agriculture in Dar es Salaam and Copenhagen. *Geografisk Tidsskrift–Danish Journal of Geography*, 113(2), 121–132. <https://doi.org/10.1080/00167223.2013.848612>
- Halvey, M. R., Santo, R. E., Lupolt, S. N., Dilka, T. J., Kim, B. F., Bachman, G. H., Clark, J. K., & Nachman, K. E. (2021). Beyond backyard chickens: A framework for understanding municipal urban agriculture policies in the United States. *Food Policy*, 103, Article 102013. <https://doi.org/10.1016/j.foodpol.2020.102013>
- Hardt, M., & Negri, A. (2009). *Commonwealth*. Harvard University Press. <https://doi.org/10.2307/j.ctvj5f48h>
- Igalla, M., Edelenbos, J., & van Meerkerk, I. (2021). Institutionalization or interaction: Which organizational factors help community-based initiatives acquire government support? *Public Administration*, 99(4), 803–831. <https://doi.org/10.1111/padm.12728>
- Jansma, J. E., Veen, E. J., & Müller, D. (2024). Beyond urban farm and community garden, a new typology of urban and peri-urban agriculture in Europe. *Urban Agriculture & Regional Food Systems*, 9(1), Article e20056. <https://doi.org/10.1002/uar2.20056>
- Leino, H., & Puumala, E. (2021). What can co-creation do for the citizens? Applying co-creation for the promotion of participation in cities. *Environment and Planning C: Politics and Space*, 39(4), 781–799. <https://doi.org/10.1177/2399654420957337>
- Mansfield, B., & Mendes, W. (2013). Municipal food strategies and integrated approaches to urban agriculture: Exploring three cases from the Global North. *International Planning Studies*, 18(1), 37–60. <https://doi.org/10.1080/13563475.2013.750942>
- Meerkerk, J. (2024). Understanding the governing of urban commons: Reflecting on five key features of collaborative governance in Zero Waste Lab, Amsterdam. *International Journal of the Commons*, 18(1), 397–410. <https://doi.org/10.5334/ijc.1282>
- Nagendra, H., & Ostrom, E. (2014). Applying the social-ecological system framework to the diagnosis of urban lake commons in Bangalore, India. *Ecology and Society*, 19(2). <https://doi.org/10.5751/ES-06582-190267>
- Orti in Comune. (2020a, September 20). *Post on the history of guidelines of UA* [Status update]. Facebook. <https://www.facebook.com/orticomunitari/posts/pfbid02LNV4HRctU9sMtx4z5f3a2ZPMMPE5QoNcTNE1Cc7unnAqQdaQMISFVbow1pDE3QVI>
- Orti in Comune. (2020b, September 29). *Post on the history of regulation discussions* [Status update]. Facebook. <https://www.facebook.com/orticomunitari/posts/pfbid02M7jxVueTnFebsZUpjmWsmbCZLrYZQVb2vu4wgneCCeiU62ouLKDj9XpVDxYaBWJMI>
- Orti in Comune. (2021, November 3). *Post on the history of EU-funded projects on UA in Rome, Italy* [Status update]. Facebook. <https://www.facebook.com/orticomunitari/posts/pfbid0XLKHda6ehsTXtFoNDjRNtqWX5sR3VguquVxtYUrHgDXu1geDYKxG2CQsAvf3t9VHI>
- Ostrom, E. (1990). *Governing the commons: The evolution of institutions for collective action*. Cambridge University Press. <https://doi.org/10.1017/CBO9780511807763>
- Ostrom, E. (2009). A general framework for analyzing sustainability of social-ecological systems. *Science*, 325(5939), 419–422. <https://doi.org/10.1126/science.1172133>
- Ostrom, E. (2010). Beyond markets and states: Polycentric governance of complex economic systems. *American Economic Review*, 100(3), 641–672. <https://doi.org/10.1257/aer.100.3.641>

- Rogge, N., & Theesfeld, I. (2018). Categorizing urban commons: Community gardens in the Rhine-Ruhr agglomeration, Germany. *International Journal of the Commons*, 12(2). <https://doi.org/10.18352/ijc.854>
- URBACT. (n.d.-a). *Resilient urban and peri-urban agriculture, Rome, Italy*. <http://remakingthecity.urbact.eu/resilient-urban-and-peri-urban-agriculture-rome-italy--78.case>
- URBACT. (n.d.-b). *Local groups methodology*. <https://archive.urbact.eu/urbact-local-groups>
- URBACT. (2019). *RU:RBAN*. <https://urbact.eu/networks/rurban>
- Voorberg, W. H., Bekkers, V. J. J. M., & Tummers, L. G. (2015). A systematic review of co-creation and co-production: Embarking on the social innovation journey. *Public Management Review*, 17(9), 1333–1357. <https://doi.org/10.1080/14719037.2014.930505>
- Wadumestrigue Dona, C. G., Mohan, G., & Fukushi, K. (2021). Promoting urban agriculture and its opportunities and challenges—A global review. *Sustainability*, 13(17), Article 17. <https://doi.org/10.3390/su13179609>

About the Authors



Micol Sonnino is a doctoral candidate at the Department of Geography and Regional Research at the University of Vienna. Her research interest lies in exploring the integration of participatory methods for empowering communities to shape urban sustainability transformations.



Simona Zollet received a Masters' degree in Environmental Science and Sustainable Development from Ca' Foscari University of Venice, Italy, and a PhD in International Development and Cooperation from Hiroshima University. She is currently assistant professor at Hiroshima University. Her interdisciplinary research background includes sustainability science, sociology of agriculture and food systems, and rural studies. She is currently conducting research on urban-to-rural migration and on how to create more resilient local communities and food systems at the rural-urban interface.

From Policy to Practice: Tracing the Evolution of Urban Food Policies Across London and Rotterdam

Agnese Cretella 

Department of Literary, Linguistic and Philosophical Studies, Pegaso University, Italy

Correspondence: Agnese Cretella (agnese.cretella@unipegaso.it)

Submitted: 4 November 2024 **Accepted:** 1 April 2025 **Published:** 9 July 2025

Issue: This article is part of the issue “Perspectives on Food in the Sustainable City” edited by Birgit Hoinle (University of Hohenheim), Alena Birnbaum (University of Kassel), and Petra Lütke (University of Münster), fully open access at <https://doi.org/10.17645/up.i395>

Abstract

Urban food policies (UFPs) have emerged as key instruments for addressing food system challenges at the municipal level, often framed by scholars as tools for fostering sustainability, inclusivity, and resilience. However, these policies do not exist in a vacuum; instead, they are shaped by the broader governance landscapes in which they are embedded, such as increasing city gentrification and branding. This article critically examines the evolution of UFPs in London and Rotterdam—two early adopters of UFPs in Europe—exploring how each city’s approach to food governance has shifted over time in response to political leadership, funding structures, and local priorities. Employing critical discourse analysis, this study investigates the language and priorities embedded within these policies, revealing persistent tensions between market-driven objectives and sustainable, community-focused solutions. By situating UFPs within their broader governance context, this study contributes to critical debates on urban governance: It questions whether municipalities have the capacity to implement transformative food policies or whether they remain constrained by the structural dynamics of the global food system governed by corporate imperatives.

Keywords

discourse analysis; food governance; food justice; neoliberal governance; sustainability; urban food policies

1. Introduction

Cities are increasingly under pressure to address food-related challenges due to global developments that are challenging conventional practices to feed the urban environment. With more than half of the global population now living in cities (Kundu & Pandey, 2020), the vast quantity of food required to meet urban demand poses an increasingly urgent series of issues. These include the environmental impact of industrial

food production (Ritchie et al., 2022; Sala et al., 2017), resource scarcity exacerbated by unsustainable agricultural practices (Holt-Giménez, 2019), and fossil fuel dependency linked to long-distance food transportation (Lang & Heasman, 2015). Additionally, corporate power concentration is affecting small farmers, increasing their vulnerability within global food supply chains (Clapp, 2021). Furthermore, hunger and malnutrition remain grave concerns worldwide, whilst diet-related chronic diseases have surged, resulting in an epidemic of obesity and overweight among both adults and children and exacerbating public health costs (Food and Agriculture Organization of the UN et al., 2020).

The Covid-19 pandemic has also laid bare the vulnerability of both global and national food systems, with restrictions on mobility and imports severely affecting food production and supply chains and exposing agribusinesses limited adaptive capacities (Béné, 2020; Food and Agriculture Organization of the UN, 2020). These vulnerabilities have since been compounded by geopolitical conflicts, particularly the war in Ukraine, which disrupted global grain supplies and escalated food insecurity in import-dependent nations (Hussein & Knol, 2023). These interconnected global challenges have increasingly captured the attention of scholars and civic leaders, who have proposed solutions aimed at transforming urban food systems into more sustainable and equitable configurations.

Since the early 2000s, especially in Europe, urban-level food policy experiments have appeared in various forms and names including urban food strategies, food policy councils, food charts, and food action plans, collectively constituting what has been described as the “urban food policy trend” (Cretella, 2016). As tools for addressing food-related challenges, urban food policies (UFPs) have become a focal point in academic literature, with growing attention to their emergence and their capacity to transform urban food systems (Zhong et al., 2021). In particular, the most popular area of research converges on food re-localization, with a strong focus on neighbourhood and city-scale case studies (Keegan et al., 2024). Much of this research highlights a “need to move away from a global, ‘industrialized’ food system to a more local (or ‘alternative’) one” (Harris et al., 2015, p. 64). As will be further discussed in the next section, UFPs are generally portrayed as local efforts in opposition to the challenges just described and are positioned as effective tools to counterbalance the negative impacts of the industrialised, globalised food systems.

This specific trend reflects a broader shift in urban governance, where cities are increasingly portrayed as key actors in addressing global challenges such as climate change, resource scarcity, socio-economic inequalities, and public health crises. Scholars argue that this prevailing narrative—encapsulated in the claim that “everyone thinks cities can save the planet” (Angelo & Wachsmuth, 2020, p. 1)—positions cities as innovative problem-solvers, uniquely equipped to tackle these interconnected crises (Tzaninis et al., 2021). However, some scholars noted that such localised approaches often transfer the burden of addressing systemic global challenges onto municipalities without adequately addressing the power imbalances and entrenched inequalities that underpin these issues (Janos, 2020; Keil, 2020). UFPs exemplify this broader shift, representing city-level attempts to mitigate global food vulnerabilities through local interventions. According to DuPuis and Goodman (2005), the optimistic framing of localised food initiatives—including UFPs—stems largely from a scholarly tendency to view the “local” as a site of “alternative” resistance and innovation, in contrast to the “global,” often portrayed as the “mainstream” realm of “neoliberal” imposition and control.

It is around this dualism—between UFPs as alternative, sustainability-driven projects and their entanglement with neoliberal governance frameworks—that this article positions its analysis. Through a discourse analysis

approach, this article critically examines how these two frameworks have been articulated in policy narratives in Rotterdam and London. By tracing the evolution of these narratives, this study aims to contribute to current debates on the role of cities in food governance, the influence of discourse in shaping urban regeneration, and the extent to which UFPs could function as tools for systemic transformation.

2. Established Discourses in the UFP Literature

UFPs are understood in this article as written policy documents that aim to problematise and address challenges within urban food systems. The focus of this article on policy documents addresses a gap in the existing literature: limited attention has been paid to the discursive construction of UFPs over time, particularly the ways in which policies articulate goals such as sustainability, equity, and economic growth. Whilst the concept of UFPs is often elusive—for example, most studies in this field do not endorse a specific definition of the term—authors tend to broadly mobilise it to refer to urban processes where diverse actors come together to transform food systems (Moragues-Faus & Battersby, 2021). Whilst UFPs often engage with governance mechanisms and institutional arrangements, this article does not directly evaluate these operational dimensions nor their practical outcomes. Instead, it aims to critically examine the language, priorities, and ideological underpinnings articulated in UFPs.

Such an approach is essential because much of the existing scholarship on UFPs has been predominantly celebratory, portraying them as inherently progressive tools. Scholars frequently highlight UFPs as democracy-enhancing initiatives, emphasising their focus on participation, social inclusion, reflexivity, and collaboration—qualities often contrasted with conventional, top-down urban governance models (Sonnino, 2019). Reed and Keech (2019), for instance, suggest that urban food actions enhance democratic engagement through institutional support for civic-led, grassroots food initiatives. Maye (2018) adds that UFPs may offer a viable alternative to mitigate the technocratic and neoliberal structures that characterize contemporary “smart cities.” Others frame them as “alternatives” to “neoliberal” governance (Ilieva, 2017; Wiskerke & Viljoen, 2012). More specifically, UFPs have been presented alongside specific narratives of social and environmental justice, active citizenship and the “greening” of the food system (Hebinck & Page, 2017; Reed et al., 2018).

Thus, much of the research surrounding UFPs adopts a “benevolent and unproblematic” framing (Tornaghi, 2014, p. 552). This optimistic perspective has shaped an academic focus on researching specific case studies, highlighting opportunities for cities to learn from one another and offering practical insights into diverse urban initiatives (Deakin et al., 2016; Hawkes & Halliday, 2017; Magarini & Porreca, 2019; Moragues et al., 2013; Reed et al., 2013). However, these studies offer limited evaluations of the actual impacts of UFPs, either because “monitoring and evaluation is, in the vast majority of cases, lacking” (Hawkes & Halliday, 2017, p. 97) or because “it is too early to assess how successful these will be in reshaping the dominant food system” (Sonnino, 2019, p. 6). Yet, even recently, as Marino et al. (2024, p. 1) observe, many UFPs have yet to undergo any form of evaluation—whether interim or final—despite scholarly efforts to develop frameworks for assessment. This ongoing gap highlights a critical challenge for UFPs research: Whilst much has been theorised about their transformative potential, limited empirical evidence exists to substantiate these claims, leaving their actual impact uncertain.

Against this backdrop, less attention has been paid to the unintended or potentially exclusionary dynamics of UFPs, as well as their interactions with existing policy, planning, and governance structures. For example, whilst UFPs may prioritise sustainability and inclusivity discourses, these goals often coexist with neoliberal governance logics that prioritise market competitiveness, economic growth, and urban branding (Cretella, 2019; Smaal et al., 2021). Rather than framing these dynamics as a dichotomy between “positive” and “negative” elements, it is more productive to view UFPs as sites of tension where competing discourses and priorities intersect. For instance, framing citizens as consumers may align with neoliberal urban governance strategies but conflict with grassroots aspirations for participatory and inclusive policymaking. These interactions suggest that UFPs are complex governance tools shaped by the interplay of multiple forces.

This article seeks to move beyond rigid dichotomies by critically examining how UFPs articulate and negotiate such competing priorities. Drawing on the literature discussed in this section, which has extensively framed UFPs within a dualistic narrative of “alternative” versus “neoliberal” governance, UFPs are understood in this article as embedded within broader institutional and political contexts, where policies simultaneously challenge and reproduce competing discourses. These competing discourses, outlined in Table 1 in the next section, provide both a conceptual and methodological framework for analysing UFPs. Alternative discourses prioritise participatory decision-making, local food systems, equity-driven sustainability, and redistributive, democracy-enhancing processes (Ilieva, 2017; Kramer et al., 2024; Moulaert et al., 2005; Renting et al., 2012). In contrast, neoliberal discourses are characterised by market-oriented governance, urban competitiveness, privatisation, the commercialisation of urban agriculture, and the positioning of citizens as consumers (Brenner & Theodore, 2003; McClintock, 2014; Sager, 2011; Sternberg, 2023).

3. Methodology

This study employs critical discourse analysis (henceforth CDA) to examine UFP documents from London and Rotterdam, specifically London’s series of Food Strategies (Greater London Authority [GLA], 2011, 2018; London Food, 2006) and Rotterdam’s Food and the City Initiative (Gemeente Rotterdam, 2012). These two cases were selected for their pioneer role in UFPs as well as for their sustainability approaches: the London Food Strategy (henceforth LFS) has been praised for its ambition to “feed a world city” (Reynolds, 2009), whilst Rotterdam’s focus on urban agriculture sought to position the city as the “most sustainable world harbor city” (Gemeente Rotterdam, 2011, p. 75).

CDA has been widely used to analyse policy narratives in food policy research (Bonnevera, 2024; Cretella & Buenger, 2016; Horton, 2024; Knezevic et al., 2014). Drawing on these methodological approaches, this study applies CDA to explore how UFPs construct meaning and reinforce or challenge dominant narratives. By comparing these four documents this analysis traces the initial ambitions behind each city and examines whether—and how—their objectives and discursive framing have shifted over time. By building on the theoretical discussions outlined above, this study identifies two dominant discourses in Table 1—alternative and neoliberal—as methodological tools for analysis. As will be discussed in the remainder of this article, these discourses are not necessarily mutually exclusive but often intersect within UFPs, reflecting the complex governance processes underpinning urban food systems.

Table 1. Alternative and neoliberal discourses in UFPs.

Feature	Alternative	Neoliberal
Core Values	Inclusivity, sustainability, equity, and collaboration	Market-driven logic, efficiency, competitiveness, and privatisation
Governance Approach	Bottom-up, participatory decision-making involving multiple stakeholders, including civil society and grassroots groups	Top-down governance led by public-private partnerships or dominant state actors, often with minimal public engagement
Role of Citizens	Active participants and co-creators in decision-making	Consumers or clients in a market-oriented system
Primary Goals	Social and environmental justice, redistribution of resources, and fostering local resilience	Economic growth, urban branding, inter-city competitiveness, and attracting investment
Policy Orientation	Focus on local food systems, agroecology, reducing inequalities, and enhancing community resilience	Commercialisation of urban agriculture, culinary tourism, start-up culture, and corporate partnerships
Examples in UFPs	Creation of food policy councils, support for urban agriculture, and community-based food hubs	Framing food as an economic opportunity, policies promoting culinary tourism, and partnerships with agribusinesses
Key Critiques	Risk of being fragmented or underfunded, and reliance on voluntary work or ad-hoc funding	Exclusion of marginalised communities and overemphasis on economic goals at the expense of social and environmental ones

CDA provides a method to analyse how such discourses shape policy narratives and governance arrangements: It is a tool to uncover underlying power dynamics, ideological positions, and potential contradictions in the framing of environmental policies (Hajer & Versteeg, 2005). Its primary objective is to reveal how language operates within political contexts, influencing both individual practices and collective values (Fairclough, 2013; Hajer & Versteeg, 2005). This approach is often used in examining public policy embedded within neoliberal frameworks, where it illuminates how public narratives on sustainability are constructed (Isoaho & Karhunmaa, 2019). However, CDA considers discourse as more than language: It encompasses the social, political, and institutional frameworks that shape and are shaped by communication practices. Or, to use Hajer and Versteeg's (2005, p. 175) words, discourse is "an ensemble of ideas, concepts and categories through which meaning is given to social and physical phenomena, and which is produced and reproduced through an identifiable set of practices."

This study follows Fairclough's model of CDA, applying a selective and qualitative approach to the analysis of UFP documents (Fairclough, 2013). Rather than exhaustive coding of all texts, the analysis focuses on critical interpretation, exposing discursive patterns and tensions within the documents' policy frameworks (Hajer & Versteeg, 2005). Each UFP document was assessed for quotes that represent either "alternative" or "neoliberal" dimensions according to our table, identifying recurring patterns and points of tension. For example, phrases that frame citizens primarily as consumers or that emphasise economic competitiveness may signal the influence of neoliberal frameworks, whereas participatory language might align with alternative logics. The integration of the discursive categories outlined in Table 1 facilitates a systematic exploration of this interplay.

Whilst CDA provides a systematic method for examining policy texts, it is inherently interpretive, and it may be influenced by the researcher's perspective. This study does not claim, indeed, to provide an exhaustive and unilateral analysis of all relevant texts. Instead, it focuses on these documents as representative case studies to explore how UFPs articulate competing priorities. Another limitation of this study is that the focus on policy documents excludes other forms of discourse, such as media or stakeholder interviews, which could offer complementary insights.

4. CDA in London and Rotterdam

4.1. Governance Context of London and Rotterdam

To contextualise the analysis of UFPs in London and Rotterdam, it is essential to situate these initiatives within the broader governance frameworks that characterise these cities. Neoliberalism, with its emphasis on market-driven approaches, economic competitiveness, and the commodification of public services (Brenner & Theodore, 2003; Sternberg, 2023), has profoundly influenced urban governance in both the UK and the Netherlands. This context could contribute to the shaping of the ways in which UFPs are conceptualised, implemented, and operationalised.

In the UK, urban governance has been significantly influenced by neoliberal restructuring since the 1980s. This period marked a shift towards privatisation, deregulation, and entrepreneurial urbanism, wherein cities are positioned as competitive entities vying for investment and economic growth. Such reforms have not only prioritised market-oriented strategies in urban planning but have also entrenched inequalities by privileging private sector interests over community-led initiatives (Imrie, 2003). London, in particular, exemplifies these dynamics, with its governance frameworks focusing heavily on inter-city competitiveness and branding, often at the expense of more equitable forms of urban development (Raco & Kesten, 2018; Swyngedouw et al., 2002).

Similarly, Dutch municipalities have experienced significant neoliberal influences, particularly in the areas of urban regeneration and housing policy. Since the 1990s, the Netherlands has witnessed a shift towards market-oriented and financialised systems of housing and urban planning, with increasing reliance on private actors to drive policy and development agendas (Van Gent & Hochstenbach, 2020). Rotterdam—as one of the country's largest cities—has embraced these neoliberal trends, focusing on urban branding and gentrification to become the “capital of cool” by attracting investment and tourism. These strategies, however, have been criticised for exacerbating social exclusion and marginalising vulnerable communities, reflecting a broader tension between economic growth and social equity (Custers & Willems, 2024).

Rather than existing as isolated or purely alternative initiatives, UFPs thus operate within policy landscapes that often prioritise neoliberal logic and urban competitiveness. In Section 4.2, these tensions and intersections in the selected policy documents will be explored, providing a foundation for the CDA in the subsequent section.

4.2. LFS: From Vision to Implementation

A critical milestone in the UK's food policy history was the launch of the LFS in 2006 (London Food, 2006). Initially conceived under Mayor Ken Livingstone, this pioneering policy marked the first capital-led food strategy in Europe, establishing food as a municipal governance issue focused on public health, food access, and local production. The LFS sought to address rising obesity rates, food insecurity, and the environmental impact of food systems, promoting local agriculture and community engagement as strategies to increase food resilience (Reynolds, 2009).

The LFS evolved notably as the leadership then transitioned from Boris Johnson to Sadiq Khan. Under Johnson (GLA, 2011), the policy used the 2012 Olympics as a platform to position London as a global leader in sustainable food practices (Cretella, 2015). When Sadiq Khan assumed office in 2016, the LFS took a slightly different turn. The 2018 LFS shifted focus more toward public health and equity, with initiatives targeting childhood obesity, restricting junk food advertising across transport for London, and introducing food poverty action plans for local councils (GLA, 2018). In 2023, an updated implementation plan was released to address shifting priorities and reflect progress made since 2018.

Crucially, the LFS has enjoyed a continuity of funding, policy support, as well as a dedicated food team. This dedicated team, a rare commitment to food policy at the city level, has strengthened food's profile as a policy issue and reinforced food's role within urban governance (Parsons et al., 2021). By balancing different dimensions, the LFS demonstrates how UFPs can adapt across different political mandates, enhancing understanding of how such policies can sustain and evolve over time.

4.3. Neoliberal and Alternative Discourses in the LFSs

The document *Healthy and Sustainable Food for London: The Mayor's Food Strategy* (hereafter London Food, 2006) was officially launched in May 2006. The stated aim of this document is to "ensure London has a food system that is consistent with the Mayor's objective that London should be a world-class, sustainable city" (p. 9). This statement exemplifies a dual discourse: on the one hand, alternative values of sustainability and equity are emphasised "Healthy and Sustainable"; on the other, the positioning of London as a "world-class" city reflects a neoliberal focus on urban branding and competitiveness.

The six strategic priorities, outlined in the 2006 strategy in the following order—commercial vibrancy, consumer engagement, procurement power, regional links, healthy schools, and waste reduction (p. 12)—demonstrate the interplay between discourses. For example, the positioning of "commercial vibrancy" as the first objective prioritises economic goals and signals a market-driven governance logic, reinforced by statements such as:

Food tourism is an increasingly vital element of London's attraction for visitors. It has many of the best restaurants in the world, and an unparalleled choice of cuisine. Ensuring this diversity is enhanced and quality continually improved will add to the attractiveness of London as a place to live and do business. (p. 2)

At the same time, the strategy aligns with alternative discourses by addressing food insecurity and public health challenges, particularly for vulnerable populations:

Obesity and diet-related illnesses account for a huge number of premature deaths in London, with many on low incomes suffering disproportionately. In many parts of London, people struggle to access affordable, nutritious food. Many of those involved in the food system are barely benefiting from it economically, and the environmental impact of the food system is considerable. (p. 2)

The governance approach outlined in the 2006 strategy also exemplifies a neoliberal logic through its reliance on the private sector, as well as consumers and voluntary organisations to implement food system improvements as the strategy states:

The cost of improvements to London's food system cannot be met by the public sector alone. It will be vital to maximise the input and impact of the private sector, as well as voluntary organisations and, of course, individual consumers, on an equitable and enduring basis. (p. 103)

Under Boris Johnson's leadership, the 2011 strategy (GLA, 2011) built on the 2006 framework but leaned perhaps more heavily towards neoliberal priorities. For example, the strategy states:

Feeding a city of millions is a mammoth 24-hour operation supporting hundreds of thousands of jobs, nurturing enterprise and pumping billions of pounds into our economy. Our culinary attractions—from street markets to specialist shops to Michelin-starred restaurants—are essential ingredients of the city's unrivalled cultural scene. (GLA, 2011, p. 5)

This focus on enterprise and economic vibrancy reflects an urban branding logic, hallmarks of neoliberal governance. At the same time, alternative goals such as environmental sustainability and food security are acknowledged: "We face significant challenges to ensure access to decent, nutritious, affordable food is universally available to all Londoners, irrespective of income or location. We must also ensure that the food system treads with utmost care on the environment" (GLA, 2011, p. 5).

Further tensions emerged under Johnson, particularly in the alignment of community-based initiatives with corporate sponsorships during the 2012 Olympics (McDonald's, Coca-Cola, Sodexo, and Heineken). For example, the Capital Growth project—aiming to create 2,012 new community food growing spaces for London by 2012 and linked to the Olympics—promoted grassroots engagement but relied heavily on volunteerism, reflecting a reliance on ad-hoc funding mechanisms (Cretella, 2015, p. 9).

The latest LFS launched by Mayor Sadiq Khan in 2018 highlights social equity and environmental goals more prominently than previous iterations. The mayor "want[s] every Londoner to have access to healthy, affordable, good food—regardless of where they live, their personal circumstances or income" (GLA, 2018, p. 5). Nonetheless, neoliberal priorities persisted, particularly in the framing of food's role in urban regeneration and economic growth: "Food can bring high streets back to life, protect the environment, boost tourism and attract inward investment" (GLA, 2018, p. 5).

Discursively, the 2018 LFS leans more toward “alternative” priorities, such as inclusivity and sustainability, whilst showing a more pragmatic approach to what can realistically be achieved through municipal governance. This pragmatism is evident in the Mayor’s recognition of the limitations of his own power in statements such as: “The Mayor will do all he can to help tackle” or “not everything that can be done to improve...is within the Mayor’s powers, but we can work with partners to achieve more,” on various food-related issues (GLA, 2018, pp. 11, 28). These claims suggest a shift from previous, more celebratory rhetoric present in the previous food strategies—such as the idea that cities are able to “save” the food system—towards a grounded acknowledgement of limited capacity and shared responsibility and multi-sectoral, diffuse food governance.

The strategy particularly recognises that food governance spans beyond the local level. Khan’s reference to Brexit, which was impending at the time, illustrates this awareness of the national and supranational factors impacting London’s food system:

This London Food Strategy is being published in a time of great uncertainty, with the details of Brexit still not agreed. The London Resilience Forum is working hard to ensure disruption is minimised, but this can’t be done in isolation. That’s why I’m calling on the Government to ensure that the impact of Brexit on food is fully considered and that measures are put in place to protect this delicate and complicated system. (GLA, 2018, p. 5)

Thus, the 2018 strategy represents a shift toward pragmatic and cooperative ambitions in contrast with earlier iterations, which leant more heavily on market-driven governance frameworks and public-private partnerships. As such, the LFSs are revealed as sites of discursive negotiation, balancing competing priorities. The 2006 and 2011 strategies leant more toward neoliberal governance, emphasising economic growth, urban branding, and entrepreneurial opportunities. In contrast, the 2018 strategy shifted more focus toward alternative priorities, particularly equity, sustainability, and public health. However, neoliberal framing persists, particularly in the economic language that is used to justify policy interventions, illustrating the ongoing tension between competing governance logics.

The effectiveness of the Mayor’s goals in addressing London’s food challenges remains mixed as the city continues to face persistent inequalities and external pressures. Nowadays, the cost of the food crisis recently highlighted by the London Assembly has worsened food insecurity, which has doubled since the pandemic and left many Londoners unable to afford nutritious food (GLA, 2023). Rising inflation and Brexit-induced supply chain disruptions have intensified these challenges and disproportionately affected low-income communities (Lang et al., 2018). Despite progress in community-led initiatives like urban agriculture and food redistribution programs that offer promising solutions to localised food insecurity, structural inequalities remain entrenched.

4.4. From Vision to Fragmentation: The Evolution and Decline of Rotterdam’s Food Policy

Over the past two decades, Rotterdam has developed various strategic policies aimed at enhancing its national and international profile. The city has undergone a remarkable transformation, rebranding itself as a vibrant and innovative urban hub often referred to as the “capital of cool” (Custers & Willems, 2024). This rebranding has been driven by investments in urban regeneration, cultural and creative industries, and

sustainability initiatives, all designed to attract middle- and upper-class residents. Following the *Stadsvisie* (Urban Vision) in 2007 (Gemeente Rotterdam, 2007), which identified the city's challenges—including out-migration of skilled workers and an underdeveloped knowledge economy—Rotterdam sought to rebrand itself as a vibrant, attractive hub. As part of this strategy, sustainability and urban liveability were prioritised. Food policy emerged as part of this broader vision, seen as a tool to promote environmental sustainability, foster social cohesion, and enhance economic competitiveness. The first notable policy integrating food objectives appeared in the *Programma Duurzaam: Investeren in duurzame groei* (Sustainability Program: Investing in Sustainable Growth) in 2011 (Gemeente Rotterdam, 2011), which linked urban agriculture with sustainability. This was followed by the city's dedicated food strategy, *Food and the City: Stimuleren van stadslandbouw in en om Rotterdam* (Food and the City: Stimulating Urban Agriculture in and around Rotterdam), launched in 2012 (Gemeente Rotterdam, 2012). The document promoted urban agriculture as a means to achieve social, ecological, and economic goals simultaneously, emphasising the principles of “people-planet-profit.” (p. 10).

The culmination of this new urban vision came in 2014 with the opening of the Markthal, a landmark complex combining residential units with an indoor market hall, retail spaces, and dining venues. Supported by the municipality, the Markthal became a symbol of Rotterdam's ambition to establish itself as a hub for food, innovative architecture, and urban regeneration. This blends economic, social, and spatial goals, showcasing how food can drive urban appeal. However, despite its success as a high-profile project, the Markthal reflects a predominantly market-driven approach to food policy focused on consumption and tourism rather than systemic solutions to food insecurity or sustainability (Cretella & Buenger, 2016).

Despite the ambitious goals of the document *Food and the City*, and unlike London's consistent focus on UFP, Rotterdam's food strategy failed to evolve into a sustained, long-term framework. After the completion of its initial phase, municipal funding for the initiative ceased, and no new comprehensive food policies were introduced. As a result, identifiable food-related activities have been sparse. Rotterdam has since shifted its focus towards EU-funded projects, such as the Healthy Wave initiative. This programme aims to provide at-risk children with nutritious, safe, and sustainable school meals (Healthy Wave, n.d.). However, Healthy Wave focuses narrowly on school meals rather than adopting a comprehensive approach to UFPs, driven largely by the availability of EU funding. Given this shift, *Food and the City* remains the most comprehensive and policy-driven food initiative in Rotterdam, making it the most suitable document for conducting CDA in the following section.

4.5. Neoliberal and Alternative Discourses in Rotterdam's *Food and the City*

Rotterdam's *Food and the City* agenda revolve around three main objectives—health, a sustainable economy, and spatial quality—which are integrated with urban agriculture initiatives under the principles of “people-planet-profit” (henceforth Gemeente Rotterdam, 2012, p. 10), aiming to connect social and environmental priorities with economic growth.

The economic framing of urban agriculture is particularly strong in the document's focus on real estate, employment, and commercial activity. The policy explicitly states that urban agriculture can “increase real estate value of areas,” stimulate entrepreneurship, and generate “more jobs in the food, green, and agricultural sectors” (p. 10). Furthermore, it connects food initiatives to Rotterdam's broader strategy of

attracting a skilled workforce and boosting its international image, highlighting the “economic potential of food-related businesses to enhance the city’s appeal” (p. 12), and that “Rotterdam will become more attractive due to a variety of new types of food production in and around the city” (p. 5). The labour market is also a key concern, with the strategy acknowledging a “mismatch between the supply of labour and the demand for labour in the green sector,” suggesting that urban agriculture can help align local employment opportunities with economic growth (p. 21). The agenda further acknowledges Rotterdam’s “multicultural” population as a key asset, seeing opportunities to mobilise entrepreneurship and knowledge.

This framing reflects a neoliberal governance logic, where food initiatives are positioned as tools for economic revitalisation rather than systemic alternatives to the dominant food system. Urban agriculture is thus presented as a driver of market competitiveness, contributing to urban branding and local economic expansion rather than challenging structural inequalities in food access and distribution.

Health is another primary goal, as the municipality aims to address high obesity rates, particularly in disadvantaged neighbourhoods: “Affordable vegetables and fruit must become available for all income groups” and that “city dwellers must become more aware of the provenance of products and of the seasons” (p. 18). This quote suggests an alternative framing, where food is positioned as a public good rather than a market commodity. The emphasis on accessibility for all income groups highlights a social justice perspective, prioritising equity in food distribution.

Another alternative element is the focus on social cohesion through gardening, which can “contribute to a more socially cohesive city by connecting people” (p. 15), reduce stress and health problems, and connect youth with sustainable practices: “In combination with more physical exercise, for instance through gardening, the increase of obesity and other physical complaints that are connected with a one-sided eating pattern can be slowed down” (p. 15). The document also encourages collaboration between residents through community gardens and highlights the need for food education, particularly at the primary school level. For example, one school offers a programme to teach children how to grow and prepare vegetables, as the municipality emphasises that “the basis of bad eating patterns is laid in early childhood” (p. 17).

The agenda also promotes a more localised and sustainable food system, by strengthening connections between regional producers and urban consumers through farmers’ markets, municipal land for cultivation, and the inclusion of local food in catering contracts (p. 20). Additional initiatives, such as the Green Rooftops Program and an annual competition for citizen-led food projects, are positioned as ways to encourage urban agriculture, though these rely on short-term incentives. The document simultaneously markets local food as a consumer experience, appealing to “foodies” with regional products such as “apple juice from the Buytenhof in Rhoon,” “ground-elder pesto from Park Zestienhoven,” and “crisps from the Hoeksche Waard” (pp. 8, 17). This reflects an attempt to balance social inclusion with market-driven strategies, where food diversity is both valued for its cultural significance and promoted as an economic opportunity. However, the tension between alternative and neoliberal discourses becomes more evident when examining the trajectory of Rotterdam’s food governance in the years following *Food and the City*.

Besides the Markthal, which symbolises Rotterdam’s integration of food, urban regeneration, and tourism, and Healthy Wave, which reflects the city’s participation in EU-funded food initiatives, the most prominent municipal food-related initiative today is the recent Rotterdam Food Hub—a 60-hectare industrial site

designed to strengthen the city's position in global agrifood logistics (Port of Rotterdam, n.d.). As Western Europe's largest transit port for agricultural, horticultural, and fishery products, Rotterdam seems to have prioritised food trade infrastructure over localised food production.

Whilst the municipality continues to highlight food as a strategic sector, its focus has shifted from urban agriculture and community-led sustainability towards consolidating Rotterdam's role as an international food trade hub, facilitating long-distance food supply chains that prioritise global markets. This shift raises broader questions about the long-term direction of UFPs and the extent to which alternative governance discourses (and projects) can endure in a policy landscape increasingly shaped by economic competitiveness and market-driven priorities. In Section 5, these dynamics will be further explored through a comparative analysis of Rotterdam and London, assessing how their distinct governance models and policy trajectories shape the role of food in urban development.

5. Comparative Analysis: Alternative and Neoliberal Trends in UFPs

This study sheds light on the neoliberal elements embedded within seemingly "alternative" development policies, through an examination of UFPs in London and Rotterdam. Despite their framing around the values of environmental and social sustainability, both strategies also present, discursively, economic goals tied to urban competitiveness and growth. A comparative analysis of these policies reveals key tensions between sustainability, equity, and market-driven governance, offering insights into how UFPs operate within broader urban development strategies. In Rotterdam, food policy has been leveraged as a tool to attract "creative talents" and to invite green investment, aligning with the city's branding as a desirable location for affluent demographics. This emphasis on economic competitiveness, however, is not unique to Rotterdam. As shown in Table 2, both cities demonstrate a hybrid approach in their core values, where alternative sustainability goals coexist with economic imperatives. London, by contrast, capitalised for instance on its Capital Growth campaign to present the 2012 Olympics as a green initiative, despite contradictions with the sustainability claims linked to Olympic sponsors.

The dominant focus on sustainability and social justice in these UFPs has certainly contributed to their "alternative" labelling, as noted in existing literature discussed in Section 2. However, closer inspection reveals that these "benevolent" objectives often carry a competitive edge tied to neoliberal priorities. For example, the very term "strategy" used in these policies implies a tactical, outcome-oriented approach, commonly associated with corporate or institutional governance rather than grassroots or community-based initiatives.

To further illustrate these dynamics, Table 2 presents a structured comparison of London and Rotterdam's food policies, assessing how they align with the alternative and neoliberal discourses previously illustrated in Table 1.

The comparative framework highlights how both cities navigate a complex interplay between alternative and neoliberal dimensions, incorporating elements of sustainability, inclusivity, and economic pragmatism in different ways. As shown in Table 2, neither city adheres strictly to one model. Instead, the UFPs reflect a hybridisation, where sustainability and economic interests overlap, making it increasingly difficult to separate the "entrepreneurial" from "sustainable" policymaking (Jonas & While, 2007). The LFS contains frequent references to economic development in its policy orientation, stressing the "market opportunities

Table 2. Comparative analysis of alternative and neoliberal elements in London and Rotterdam's UFPs.

Feature	London (2006, 2011, 2018 LFSs)	Classification	Rotterdam (2012 Food & the City)	Classification
Core Values	Sustainability, equity (early focus), urban branding (later shift)	Hybrid	Sustainability combined with economic competitiveness; food initiatives positioned as part of urban creativity strategies	Hybrid
Governance Approach	Institutionalised and evolving (Food Board, food poverty action plans)	Alternative	Project-based, reliant on private-sector and EU funding	Neoliberal
Role of Citizens	Consumer responsibility (2006) but growing emphasis on community participation (2018)	Hybrid	Citizens primarily framed as food entrepreneurs and consumers	Neoliberal
Primary Goals	Social justice (early years), shifting to economic growth and urban branding (2011), and again to public health (2018)	Hybrid	Balancing sustainability with economic competitiveness	Hybrid
Policy Orientation	Food security, public health, and local food systems (2006), later integrated with private investment and regeneration strategies (2011, 2018)	Hybrid	Urban agriculture for social and environmental benefits but also used to appeal to wealthier demographics	Hybrid
Examples in UFPs	London Food Board, food poverty action plans	Alternative	Markthal, real estate-driven urban agriculture, city branding, and community gardens	Hybrid
Key Critiques	Risk of sustainability being co-opted by economic interests, policy continuity dependent on political shifts		Lack of long-term municipal commitment, reliance on external funding, "gastro-gentrification"	

linked to sustainable food" and highlighting expected gains with language such as "enterprise," "thousands of jobs," and "billions of pounds." Under Boris Johnson's mayoralty, this strategy functioned as a response to criticism over the 2012 Olympics sponsorships by major corporations like McDonald's, Coca-Cola, Sodexo, and BP (the latter being branded as a "sustainability partner"), which attracted scrutiny due to its limited alignment with the principles of sustainable food governance (Cretella, 2015). The strategic engagement of corporate actors in these policies further highlights how power is concentrated among business elites, shaping urban food governance to reflect market interests rather than community needs.

The two documents also illustrate a broader neoliberal theme of positioning citizens as consumers, where sustainable food habits and choices are presented as issues of rational action alone. For example, Rotterdam's policy asserts that "affordable vegetables and fruit must become available for all income groups," yet follows this by stressing that "city dwellers must become more aware of the provenance of

products and of the seasons.”). In shifting the focus onto individuals, the local government omits structural welfare solutions, assuming that food knowledge and healthy lifestyles are universally accessible without addressing the socio-economic barriers involved.

Rotterdam’s policy orientation also seeks to appeal to specific demographics by promoting regional, artisanal products that are generally priced higher. These symbolic products, combined with activities like urban agriculture and the promotion of food-related urban spaces, reflect a targeted appeal to middle- and upper-income residents rather than to low-income populations. This signals a form of “gastro-gentrification” where UFPs reinforce social hierarchies, privileging the tastes and consumption patterns of wealthier groups (Veron, 2024). These findings resonate with Shannon’s (2013) concept of Neoliberal paternalism, whereby governance around food issues adopts a moralising tone primarily disciplining low-income populations. Our analysis goes further: moral coordinates within food policy can also serve to attract and speak to wealthier classes, with cities using food to signal the type of residents they wish to attract. For instance, London’s “culinary attractions—from street markets to specialist shops to Michelin-starred restaurants—are essential ingredients of the city’s unrivalled cultural scene,” a message targeted at the city’s middle- and upper-class residents.

This also resonates with Tornaghi’s (2014) concern that urban food actions, rather than challenging socio-economic inequality, could exacerbate exclusionary dynamics. The cases of London and Rotterdam reveal a transfer of responsibility for ethical and sustainable food choices to citizens. Through the lens of CDA, this shift illustrates how discursive power operates to shape public perception of sustainability as a matter of personal responsibility rather than a structural issue requiring systemic intervention (Lockie, 2009). By conceptualising citizens as consumers within these frameworks, both municipalities champion ideals of sustainable, artisanal, and local food production—commodities that, by their very nature, are priced above the reach of lower-income residents. It is worth noting, however, that London’s most recent policy of 2018 takes steps toward addressing some of these disparities.

This transfer of responsibility, alongside the outsourcing of public services, aligns with the neoliberal paradigm of public governance known as New Public Management (Pollitt, 2003). The latter emerged as a model in the early 1980s as the tendency to bring the coordination mechanism of the market to the public domain. That meant holding a neoliberal orientation with regards to governance: extending market mechanisms on the public services (e.g., competitive tendering), imposing the view of “citizens” as “consumers,” and in general keeping a less defined distinction between the public, market and voluntary sectors.

Also, Rotterdam’s core aim to use food as an attraction for the creative class aligns with broader theories of urban creativity (Florida, 2007; Landry, 2012; Mayer, 2013; Peck, 2005), where food-related spaces like farmers markets, urban allotments, and high-end cafés support a curated urban experience designed to appeal to specific demographics. These spaces are often advertised as “sustainable” rather than entrepreneurial, sidelining the commercial nature of such initiatives. Evidence from food projects in Rotterdam suggests a clear connection to gentrification, where such ventures often facilitate the influx of wealthier populations into urban neighbourhoods (Anguelovski, 2016; Cohen, 2018).

In general, UFPs are often framed as tools for advancing social and environmental goals, but our analysis suggests that they can also function as instruments for economic growth within a neoliberal framework. Although economic development is sometimes positioned as a means to enhance social justice and

sustainability, our findings indicate that UFPs operate within the dominant neoliberal food regime. Rather than disrupting the structural dynamics of global food economics, these policies appear to focus on mitigating their consequences, raising questions about the extent to which UFPs can serve as genuine alternatives, as claimed by most scholars, to market-driven governance.

However, the 2018 LFS reveals a discursive shift, adopting a more pragmatic view of what can realistically be achieved within municipal governance. This realism is evident in the mayor's acknowledgement of his own limitations: "The Mayor will do all he can to help tackle" food-related issues, yet "not everything that can be done to improve...is within the Mayor's powers." These statements reflect a shift from earlier, idealised aspirations toward a more measured perspective on municipal capacity. By openly acknowledging the limits of local governance, the 2018 LFS reframes UFP as a shared endeavour that requires alignment across various levels of government. Khan's appeals to the national government underscore the need for broader, integrated support to effectively tackle complex food issues.

Whilst this highlights the complexities of multi-level food governance, it remains unclear to what extent these strategies were shaped by top-down decision-making or bottom-up stakeholder engagement. The extent to which citizens' perspectives influenced either the neoliberal or alternative dimensions of these policies is not explicitly documented, posing a limitation in assessing the participatory nature of these strategies. This ambiguity highlights the challenges of multi-level governance, where food strategies must navigate the competing demands of municipal authority, national policy frameworks, and stakeholder participation. As such, lasting change in urban food systems demands not only local action but also coordinated, multi-level partnerships that integrate diverse perspectives and governance scales (Sonnino & Coulson, 2021).

To conclude, the UFPs discussed in this article are neither divorced from economic imperatives nor isolated from the broader neoliberal framework of contemporary urban development. As shown in Table 2, these policies exhibit instead hybrid characteristics, blending alternative governance approaches—such as urban agriculture, community engagement, and food security initiatives—with economic rationales tied to urban regeneration and competitiveness.

6. Conclusion: Toward Inclusive and Sustainable UFPs

This article set out to critically examine how UFPs in London and Rotterdam navigate competing priorities. Through the use of CDA, policy documents were analysed to explore the intersection between alternative and neoliberal governance logics. The findings reveal that whilst these policies are often framed around sustainability, community, and social inclusion, they simultaneously accommodate market-driven objectives such as urban branding, economic competitiveness, and selective inclusivity. As a result, rather than challenging the structural inequalities embedded in the global food system, UFPs risk reinforcing neoliberal paradigms by prioritising market-driven goals and community self-reliance.

London's and Rotterdam's respective UFPs also illustrate divergent approaches to governance. London's sustained engagement with food policy, supported by consistent funding and a dedicated team, reflects a more integrated, evolving approach that seeks to address issues like food poverty and public health. The 2018 LFS reveals a distinct shift towards cooperative governance and an acknowledgement of the

limitations of municipal power in tackling complex food issues, with the mayor calling for support from the national government and cross-sector partnerships to strengthen the city's food resilience.

Conversely, Rotterdam's discontinuation of its Food and the City initiative following its initial project period reflects a shorter-term, project-based approach to UFPs, characterised by its reliance to continue investing in the topic based on external funding like the EU-backed Healthy Wave initiative. This dependence on grant cycles underscores Rotterdam's selective engagement with food policy, treating it more as an urban branding tool than as a comprehensive strategy for food resilience. This shift is further reflected in the city's prioritisation of large-scale agrifood infrastructure, as seen in the Rotterdam Food Hub.

As UFPs continue to evolve in Europe, it is crucial to critically assess their long-term governance models. Will cities continue to rely on short-term project-based funding (like Rotterdam), or will they integrate food policies into more institutionalised, long-term strategies that try to address structural inequalities (like London)? Furthermore, as municipalities take on an increasing role in food sustainability, the question remains whether they truly possess the power and capacity to implement transformative food policies, or whether their actions are constrained by the broader global economy of food governance.

As with any discourse analysis, this study is inherently interpretive, shaped by the researcher's reading of policy texts. Whilst this approach reveals how UFPs are framed and legitimised, it primarily captures institutional narratives rather than the lived experiences of those affected. Future research could complement this by incorporating ethnographic methods, stakeholder interviews, or participatory approaches to examine how UFPs are experienced, particularly by marginalised communities.

Moreover, urban food governance extends beyond official documents. To contextualise policy discourse, key developments shaping food governance today were also mapped. The Rotterdam Food Hub illustrates how the city's priorities have shifted from food resilience toward large-scale agrifood logistics. Similarly, recent reports from the London Assembly on worsening food insecurity highlight the limits of municipal interventions in addressing structural inequalities. Considering these broader developments allows for an assessment not only of the rhetoric of UFPs but also of their material trajectories and evolving governance priorities.

These findings also call into question the broader role of cities as key actors in tackling global food challenges, a narrative that has gained traction in urban governance scholarship. As discussed in Section 1, cities are increasingly positioned as the frontline problem-solvers for complex global crises, from climate change to resource scarcity, socio-economic inequalities, and public health crises (Angelo & Wachsmuth, 2020; Tzaninis et al., 2021). However, given the ongoing multi-crisis context, which includes post-pandemic recovery, geopolitical disruptions in food supply chains and worsening food insecurity, does it still make sense to assume that cities can effectively lead the transition toward more sustainable food systems? The cases of London and Rotterdam suggest that whilst UFPs can play a role, they often remain embedded in broader market-driven governance logics, raising questions about whether municipal food strategies alone can meaningfully challenge the structural inequalities of the global food system.

Ultimately, the findings call for a more critical and reflexive approach to the development of UFPs, one that moves beyond sustainability rhetoric to ensure that food policies are not only resilient but also structurally inclusive, long-term, and capable of addressing systemic food inequalities.

Acknowledgments

I would like to thank the editors and anonymous reviewers for their thoughtful and constructive feedback, which greatly improved the ideas presented in this article. I am also grateful to John Grin and Anna Loeber for their guidance and insightful comments during my time at the University of Amsterdam. This research was supported by the Italian PON Research and Innovation 2014/2020 funding scheme and conducted within the framework of the CoronaFood project.

Funding

PON funding scheme—Research and Innovation 2014/2020 (J41B21012140007).

Conflict of Interests

The author declares no conflict of interests.

Data Availability

Most of these documents are publicly available through the official websites of the respective city governments. One document—*The Mayor's Food Strategy: Healthy and Sustainable Food for London. An Implementation Plan 2011–2013*—is no longer accessible online, but access can be requested from the Greater London Authority's Public Liaison Unit (mayor@london.gov.uk).

References

- Angelo, H., & Wachsmuth, D. (2020). Why does everyone think cities can save the planet? *Urban Studies*, 57(11), 2201–2221.
- Anguelovski, I. (2016). Healthy food stores, greenlining and food gentrification: Contesting new forms of privilege, displacement and locally unwanted land uses in racially mixed neighborhoods. *International Journal of Urban and Regional Research*, 39(6), 1209–1230.
- Béné, C. (2020). Resilience of local food systems and links to food security: A review of some important concepts in the context of Covid-19 and other shocks. *Food Security*, 12(4), 805–822.
- Bonnevera, I. (2024). "New food cultures" and the absent food citizen: Immigrants in urban food policy discourse. *Agriculture and Human Values*, 42, 333–349. <https://doi.org/10.1007/s10460-024-10609-9>
- Brenner, N., & Theodore, N. (2003). *Spaces of neoliberalism: Urban restructuring in North America and Western Europe*. Wiley.
- Clapp, J. (2021). The problem with growing corporate concentration and power in the global food system. *Nature Food*, 2(6), 404–408.
- Cohen, N. (2018). *Feeding or starving gentrification: The role of food policy*. CUNY Urban Food Policy Institute.
- Cretella, A. (2015). Beyond the alternative complex. The London urban food strategy and neoliberal governance. *Métropoles*, 17, 1–16. <https://doi.org/10.4000/metropoles.5147>
- Cretella, A. (2016). Urban food strategies. Exploring definitions and diffusion of European cities' latest policy trend. In K. Andersson, S. Sjöblom, L. Granberg, P. Ehrström, T. Marsden (Eds.), *Metropolitan ruralities* (pp. 303–323). Emerald Group.
- Cretella, A. (2019). Alternative food and the urban institutional agenda: Challenges and insights from Pisa. *Journal of Rural Studies*, 69, 117–129.
- Cretella, A., & Buenger, M. S. (2016). Food as creative city politics in the city of Rotterdam. *Cities*, 51, 1–10.
- Custers, G., & Willems, J. J. (2024). Rotterdam in the 21st century: From 'sick man' to 'capital of cool.' *Cities*, 150, Article 105009.

- Deakin, M., Borrelli, N., & Diamantini, D. (2016). *Governance of city food system. Case Studies from around the world*. Fondazione Giangiacomo Feltrinelli.
- DuPuis, E. M., & Goodman, D. (2005). Should we go “home” to eat?: Toward a reflexive politics of localism. *Journal of Rural Studies*, 21(3), 359–371.
- Fairclough, N. (2013). Critical discourse analysis and critical policy studies. *Critical Policy Studies*, 7(2), 177–197.
- Florida, R. (2007). *The flight of the creative class : The new global competition for talent*. Collins.
- Food and Agriculture Organization of the UN. (2020). *Addressing the impacts of Covid-19 in food crises | April–December 2020: FAO's component of the global Covid-19 humanitarian response plan*.
- Food and Agriculture Organization of the UN, International Fund for Agricultural Development, UNICEF, World Food Programme, & WHO. (2020). *The state of food security and nutrition in the world 2020: Transforming food systems for affordable healthy diets*. Food and Agriculture Organization of the UN.
- Gemeente Rotterdam. (2007). *Stadsvisie—Spatial Development Strategy 2030*.
- Gemeente Rotterdam. (2011). *Programma Duurzaam—investeren in duurzame groei*.
- Gemeente Rotterdam. (2012). *Food & the city: Stimulating urban agriculture in and around Rotterdam*.
- Greater London Authority. (2011). *The Mayor's food strategy: Healthy and sustainable food for London. An implementation plan 2011–2013*.
- Greater London Authority. (2018). *The London food strategy: Healthy and sustainable food for London*. https://www.london.gov.uk/sites/default/files/final_london_food_strategy.pdf
- Greater London Authority. (2023). *Cost of food crisis*. <https://www.london.gov.uk/who-we-are/what-london-assembly-does/questions-mayor/find-an-answer/cost-food-crisis>
- Hajer, M., & Versteeg, W. (2005). A decade of discourse analysis of environmental politics: Achievements, challenges, perspectives. *Journal of Environmental Policy & Planning*, 7(3), 175–184.
- Harris, J., Dougill, A., & Owen, A. (2015). Feeding a city: What do academic researchers think should be on the urban food system's plate? In *Sustainable Ecological Engineering Design for Society (SEEDS): Proceedings of the First International Conference* (pp. 62–76). Leeds Beckett University. <https://eprints.leedsbeckett.ac.uk/id/eprint/1846/1/SEEDS%20Conference%202015%20-%20Papers.pdf#page=64>
- Hawkes, C., & Halliday, J. (2017). *What makes urban food policy happen? Insights from five case studies*. International Panel of Experts on Sustainable Food Systems.
- Healthy Wave. (n.d.). *Homepage*. <https://www.healthywave.eu>
- Hebinck, A., & Page, D. (2017). Processes of participation in the development of urban food strategies: A comparative assessment of Exeter and Eindhoven. *Sustainability*, 9(6), Article 931.
- Holt-Giménez, E. (2019). *Can we feed the world without destroying it?* Wiley.
- Horton, J. (2024). Producing food utopia(s) at the UN food systems summit: A thematic discourse analysis of Australia's summit dialogues. *Environmental Science & Policy*, 151, Article 103605.
- Hussein, H., & Knol, M. (2023). The Ukraine war, food trade and the network of global crises. *The International Spectator*, 58(3), 74–95.
- Ilieva, R. T. (2017). Urban food systems strategies: A promising tool for implementing the SDGs in practice. *Sustainability*, 9(10), Article 1707.
- Imrie, R. (2003). *Urban renaissance? New labour, community and urban policy*. The Policy Press.
- Isoaho, K., & Karhunmaa, K. (2019). A critical review of discursive approaches in energy transitions. *Energy Policy*, 128, 930–942.
- Janos, N. (2020). Urbanising territory: The contradictions of eco-cityism at the industrial margins, Duwamish River, Seattle. *Urban Studies*, 57(11), 2282–2299.
- Jonas, A. E., & While, A. (2007). Greening the entrepreneurial city. In R. Krueger & D. Gibbs, *The sustainable*

- development paradox: *Urban political economy in the United States and Europe* (pp. 123–159). Guilford Publications.
- Keegan, S., Reis, K., Roiko, A., & Desha, C. (2024). Exploring resilience concepts and strategies within regional food systems: A systematic literature review. *Food Security*, 16(3), 801–825.
- Keil, R. (2020). An urban political ecology for a world of cities. *Urban Studies*, 57(11), 2357–2370.
- Knezevic, I., Hunter, H., Watt, C., Williams, P., & Anderson, B. (2014). Food insecurity and participation: A critical discourse analysis. *Critical Discourse Studies*, 11(2), 230–245.
- Kramer, J., Silverton, S., & Späth, P. (2024). Urban governance arrangements for sustainability and justice—linking theory with experience. *Urban Transformations*, 6(1), Article 6.
- Kundu, D., & Pandey, A. K. (2020). World urbanisation: Trends and patterns. In D. Kundu, R. Sietchiping, & M. Kinyanjui (Eds.), *Developing national urban policies: Ways forward to green and smart cities* (pp. 13–49). Springer.
- Landry, C. (2012). *The creative city: A toolkit for urban innovators*. Routledge.
- Lang, T., & Heasman, M. (2015). *Food wars: The global battle for mouths, minds and markets*. Routledge.
- Lang, T., Lewis, T., Marsden, T., & Millstone, E. (2018). *Feeding Britain: Food security after Brexit*. Food Research Collaboration.
- Lockie, S. (2009). Responsibility and agency within alternative food networks: Assembling the “citizen consumer.” *Agriculture and Human Values*, 26, 193–201.
- London Food. (2006). *Healthy and sustainable food for London: The Mayor’s Food Strategy—May 2006*. London Development Agency. https://www.london.gov.uk/sites/default/files/the_mayors_food_strategy_2006.pdf
- Magarini, A., & Porreca, E. (2019). *European cities leading in urban food systems transformation: Connecting Milan & FOOD 2030*. Publications Office of the European Union.
- Marino, D., Vassallo, M., & Cattivelli, V. (2024). Urban food policies in Italy: Drivers, governance, and impacts. *Cities*, 153, Article 105257.
- Maye, D. (2018). ‘Smart food city’: Conceptual relations between smart city planning, urban food systems and innovation theory. *City, Culture and Society*, 16, 18–24.
- Mayer, M. (2013). First world urban activism: Beyond austerity urbanism and creative city politics. *City*, 17(1), 5–19.
- McClintock, N. (2014). Radical, reformist, and garden-variety neoliberal: Coming to terms with urban agriculture’s contradictions. *Local Environment*, 19(2), 147–171.
- Moragues, A., Morgan, K., Moschitz, H., Neimane, I., Nilsson, H., Pinto, M., Rohtacher, H., Ruiz, R., Tisenkops, T., & Halliday, J. (2013). *Urban food strategies: The rough guide to sustainable food systems*. Foodlinks.
- Moragues-Faus, A., & Battersby, J. (2021). Urban food policies for a sustainable and just future: Concepts and tools for a renewed agenda. *Food Policy*, 103, Article 102124.
- Moulaert, F., Martinelli, F., Swyngedouw, E., & Gonzalez, S. (2005). Towards alternative model (s) of local innovation. *Urban Studies*, 42(11), 1969–1990.
- Parsons, K., Lang, T., & Barling, D. (2021). London’s food policy: Leveraging the policy sub-system, programme and plan. *Food Policy*, 103, Article 102037.
- Peck, J. (2005). Struggling with the creative class. *International Journal of Urban and Regional Research*, 29(4), 740–770.
- Pollitt, C. (2003). The new public management: Revolution or fad? In C. Pollitt (Ed.), *The essential public manager* (pp. 26–51). Berkshire; Open University.
- Port of Rotterdam. (n.d.). *Rotterdam food hub*. <https://www.portofrotterdam.com/en/setting/plots/rotterdam-food-hub>

- Raco, M., & Kesten, J. (2018). The politicisation of diversity planning in a global city: Lessons from London. *Urban Studies*, 55(4), 891–916.
- Reed, M., Curry, N., Keech, D., Kirwan, J., & Maye, D. (2013). *City-region report synthesis (SUPURBFOOD)*. Countryside and Community Research Institute.
- Reed, M., & Keech, D. (2019). Making the city smart from the grassroots up: The sustainable food networks of Bristol. *City, Culture and Society*, 16, 45–51.
- Reed, M., Mettepenningen, E., Swagemakers, P., Garcia, M., Jahrl, I., & Koopmans, M. E. (2018). The challenges of governing urban food production across four European city-regions: Identity, sustainability and governance. *Urban Agriculture & Regional Food Systems*, 3(1), 1–10.
- Renting, H., Schermer, M., & Rossi, A. (2012). Building food democracy: Exploring civic food networks and newly emerging forms of food citizenship. *The International Journal of Sociology of Agriculture and Food*, 19(3), 289–307.
- Reynolds, B. (2009). Feeding a world city: The London food strategy. *International Planning Studies*, 14(4), 417–424.
- Ritchie, H., Rosado, P., & Roser, M. (2022). *Environmental impacts of food production*. Our World in Data. <https://ourworldindata.org/environmental-impacts-of-food?fbclid=IwAR1h-6Dqxoti9sv#article-citation>
- Sager, T. (2011). Neo-liberal urban planning policies: A literature survey 1990–2010. *Progress in Planning*, 76(4), 147–199.
- Sala, S., McLaren, S. J., Notarnicola, B., Saouter, E., & Sonesson, U. (2017). In quest of reducing the environmental impacts of food production and consumption. *Journal of Cleaner Production*, 140, 387–398.
- Shannon, J. (2013). Food deserts governing obesity in the neoliberal city. *Progress in Human Geography*, 38(2), 248–266.
- Smaal, S. A., Dessein, J., Wind, B. J., & Rogge, E. (2021). Social justice-oriented narratives in European urban food strategies: Bringing forward redistribution, recognition and representation. *Agriculture and Human Values*, 38(3), 709–727.
- Sonnino, R. (2019). The cultural dynamics of urban food governance. *City, Culture and Society*, 16, 12–17.
- Sonnino, R., & Coulson, H. (2021). Unpacking the new urban food agenda: The changing dynamics of global governance in the urban age. *Urban Studies*, 58(5), 1032–1049.
- Sternberg, C. (2023). *Neoliberal urban governance: Spaces, culture and discourses in Buenos Aires and Chicago*. Springer.
- Swyngedouw, E., Moulaert, F., & Rodriguez, A. (2002). Neoliberal urbanization in Europe: Large-scale urban development projects and the new urban policy. *Antipode*, 34(3), 542–577.
- Tornaghi, C. (2014). Critical geography of urban agriculture. *Progress in Human Geography*, 38(4), 551–567.
- Tzaninis, Y., Mandler, T., Kaika, M., & Keil, R. (2021). Moving urban political ecology beyond the ‘urbanization of nature.’ *Progress in Human Geography*, 45(2), 229–252.
- Van Gent, W., & Hochstenbach, C. (2020). The neo-liberal politics and socio-spatial implications of Dutch post-crisis social housing policies. *International Journal of Housing Policy*, 20(1), 156–172.
- Veron, O. (2024). “It’s about how you use your privilege”: Privilege, power, and social (in)justice in Berlin’s community food spaces. *Antipode*, 56(5), 1949–1974.
- Wiskerke, J. S. C., & Viljoen, A. (2012). Sustainable urban food provisioning: Challenges for scientists, policymakers, planners, and designers. In A. Viljoen & J. S. C. Wiskerke (Eds.), *Sustainable food planning: Evolving theory and practice* (pp. 19–36). Wageningen Academic.
- Zhong, Q., Wang, L., & Cui, S. (2021). Urban food systems: A bibliometric review from 1991 to 2020. *Foods*, 10(3), Article 662.

About the Author



Agnese Cretella is assistant professor in Sociology at Pegaso University, Italy. She investigates how food practices intersect with urban transformation, inequalities, and sustainability discourses. She has contributed to various international research projects through positions at Trinity College Dublin, the University of Bologna, Wageningen University, and the University of Amsterdam, and serves on the editorial board of *Food Ethics*.

Shaping Equitable Access to Food: Barcelona's Supply Planning and Policies in Perspective

Eulàlia Gómez-Escoda 

Department of Urbanism, Territory and Landscape, Universitat Politècnica de Catalunya – BarcelonaTech, Spain

Correspondence: Eulàlia Gómez-Escoda (eulalia.gomez@upc.edu)

Submitted: 31 October 2024 **Accepted:** 12 March 2025 **Published:** 4 June 2025

Issue: This article is part of the issue “Perspectives on Food in the Sustainable City” edited by Birgit Hoinle (University of Hohenheim), Alena Birnbaum (University of Kassel), and Petra Lütke (University of Münster), fully open access at <https://doi.org/10.17645/up.i395>

Abstract

This article examines the interplay between urban planning, public policy, and food systems, focusing on the city of Barcelona as a case study. The study explores the historical shaping of access to fresh food by public urban policies and planning, ensuring a balanced territorial distribution across the city while addressing broader implications for public health, social equity, and sustainability. The analysis begins with an overview of Barcelona's food supply system, which is characterized by an extensive set of public market halls and specialty stores, strategically embedded within a compact urban fabric that ensures walkable access for residents. The research highlights the evolution of planning actions, from 19th century bylaws aimed at regulating food hygiene and spatial organization of food sales to contemporary initiatives influenced by the Milan Urban Food Policy Pact, which emphasize the proximity between households and providers and promote the consumption of local goods.

Keywords

Barcelona; food planning; food retail; food supply; proximity

1. Introduction

The relationship between urban planning and health is close and inseparable (Barton & Grant, 2013; Pineo et al., 2020; Prior et al., 2023; Siri & Geddes, 2022). The origins of this bond lay in ensuring minimum standards of hygiene to combat the spread of communicable diseases (Corburn, 2004; Rodger, 2019). After addressing these concerns, urban policies and planning assume a pivotal role in shaping the health and well-being of residents by influencing access to fundamental health determinants, including education, nutritious food, healthcare, and social or recreational services (Harris & De Leeuw, 2023; McManus, 2023).

When this is also assured, urban policies and planning play a pivotal role in addressing the rise of non-communicable diseases resulting from harmful exposures and unhealthy habits such as air, noise, or light pollution, limited access to green spaces, insufficient physical activity, or less optimal diets (Fazeli Dehkordi et al., 2022; World Health Organization, 2017). Consequently, food emerges as a pivotal element in urban planning, aimed at fostering healthier urban environments, provided that basic hygiene standards are met.

The primary challenge concerning sustenance pertains to the limited access to food experienced by over 35% of the global population, a proportion that increases to 71.5% in low-income nations (Food and Agriculture Organization et al., 2024). In the absence of structural hunger problems, studies have observed that those urban areas that are more disadvantaged have a significantly scarcer healthy food supply—so-called “food deserts”—with fewer fresh produce stores, putting the health of lower-income residents at risk (Kaczynski et al., 2020; Sáenz de Tejada, 2024). From the perspective of urban planning, these spatial distribution deficiencies can be addressed by designs and policies that promote equitable access to essential services, thereby fostering a healthy lifestyle for the population. This approach involves addressing the correlation between population density and the location of minimum services. Such facilities are vital in facilitating access to medical treatments and promoting healthy dietary practices (Pratt et al., 2022).

In post-Fordist urban cultures where access to food is guaranteed, the relationship between citizens and food is often characterized by a passive approach, with eating becoming an act of energy supply for everyday functioning (Rosenthal & Flood, 2019). Nevertheless, how individuals procure groceries, encompassing the type of food purchased, the architectural design of the establishments that sell it, the distances and frequencies involved, and the means of transport used, differs for each metropolis. The particular configuration of the food supply in each location is influenced by the urban form; however, it is ultimately determined by a sequence of planning decisions that establish regulations and designs. These decisions, in turn, determine the spatial distribution of food suppliers and their subsequent equity in access, which is contingent upon the density and compactness of the urban form.

In suburban areas characterized by dispersed urbanization, access to food is often heavily reliant on car mobility, as public transit infrastructure in these territories is frequently inadequate (Dumas et al., 2021). The car-dependent mobility model has been demonstrated to impose limitations on access for non-drivers, thereby contributing to systemic societal inequities. This model has the potential to marginalize individuals lacking the capacity to drive and vulnerable populations, including low-income households and the elderly, who may encounter challenges in accessing reliable private transportation. This, in turn, can impede their participation in essential activities, such as food shopping (Bose, 2024). Consequently, while food availability may not be an issue, the reliance on automobiles underscores systemic challenges in ensuring equitable access to food resources.

In compact environments, the distribution of food premises affects the behavior of residents in terms of close proximity. The proximity of essential services fosters conditions to cope with shorter trips and promotes nonmotorized transport, reducing pollution and congestion problems; create a more democratic urban space, diminishing the social differences caused by diverse access to transport; make all the facilities in the city equally available to all kinds of people, and end up producing equal and socially sustainable traveling patterns (Gomez-Escoda et al., 2022; Marquet & Miralles-Guasch, 2015). In these compact

environments, walkability is regarded as one of the qualities that enhances the value of places in terms of health, social, economic, and environmental outcomes (Valls & Clua, 2023). Moreover, walkability has been demonstrated to contribute to the well-being of citizens across a range of time horizons, irrespective of their socio-economic circumstances (Carmona, 2018).

Conversely, the proximity of food sources has been shown to entail both advantages and disadvantages. In high-density urban areas, food outlet proximity influences purchasing behavior, with individuals more likely to consume healthier options when unhealthy alternatives are placed farther away (Hunter et al., 2019). However, food access can also drive gentrification and price inflation, as the presence of high-quality food suppliers in a neighborhood can increase property values, often displacing lower-income residents who originally relied on those food sources (Mackenbach et al., 2019). Conversely, despite proximity, the variety of food offerings may remain limited. Urban areas, particularly those with lower incomes, which are often characterized by a prevalence of unhealthy food options, have been termed “food swamps” and are associated with dietary imbalances and increased health risks (Cooksey-Stowers et al., 2017; Richardson et al., 2018).

Moreover, the concentration of food outlets in a given area can have a detrimental effect on the environment and noise pollution. This is because the presence of delivery trucks, waste disposal facilities, and an increase in foot traffic can negatively impact the local community. Conversely, the increased distance between food stores and their customers has been shown to be associated with an increase in food waste and the environmental impact of last-mile delivery. This relationship underscores the pivotal role that the relationship between population density and food outlet density plays in environmental sustainability (Conrad et al., 2018).

In light of the heterogeneity that characterizes food acquisition scenarios within diverse urban contexts, this article focuses on compact metropolitan environments, where supply is assured, and seeks to address the following research question: How do public urban planning policies and regulations influence the spatial configuration of the food supply system and impact equity in access to food?

Starting from the premise that access to food is determined by socioeconomic factors and conditioned by urban form, and therefore constitutes a particular footprint for each metropolis, this article examines the role of the evolution of public policies that have shaped and designed food procurement in the city of Barcelona in the last two centuries. The investigation refers to an urban reality in which food security is guaranteed following the accepted definition, which states that food security exists when “all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (Food and Agriculture Organization, 1996). The discussion is international in scope, although the research is based on a specific case study, which consequently allows for the presentation of data with a local character. The exemplary nature of the case and the approach methodology allow for comparisons to be made with other metropolitan realities.

2. Context and Methodology

Food purchases constitute approximately 16% of the household budget in Catalonia (Generalitat de Catalunya, 2023), the northeastern region of Spain in which Barcelona is situated. This figure is exceeded

only by that allocated to housing. This is in addition to the amount spent on eating out—including hotels—which is the fourth largest expenditure category, accounting for almost 9% of the family budget, after transport. This pattern of consumption is consistent with Engel's law, which posits that, as income rises, the proportion of income spent on food falls (Engel, 1857). This is so despite the fact that actual expenditure on food rises, resulting in wealthier households spending a much smaller proportion of their household budget on food (Cabannes & Marocchino, 2018).

While urbanism and architecture often focus on how citizens live and move—considering that mobility expenses rank as the third-largest household cost—the issue of how citizens eat is seldom addressed in architectural and urban planning projects. This gap began to be discussed a decade ago with the signing of the Milan Pact, a global agreement among cities dedicated to “developing sustainable food systems that are inclusive, resilient, safe, and diverse; providing healthy and affordable food to all people within a human rights-based framework; minimizing waste; conserving biodiversity; and adapting to and mitigating the impacts of climate change” (Milan Municipality, 2015).

Barcelona, one of the signatory cities, has a 200-year legacy of design and planning strategies that have consistently prioritized ensuring its citizens have access to fresh food. To gain insight into the distinctive character of the food supply that serves the city today, this article examines the evolution of the public planning of the food commercial fabric, composed of 39 market halls and 5,834 food shops. From this standpoint, an analysis of the evolution of urban bylaws regulating food shops reveals that, historically, the administration has exhibited a propensity to either promote specific patterns of clustering or opt for the decentralization of food-related commodities. Conversely, the analysis of plans to strengthen and extend the public market halls system, as well as designs to make these essential public facilities more complex, elucidates the commitment that the municipality has had to food procurement over time.

The research employs a dual methodology. On the one hand, it incorporates both secondary sources and a systematic analysis of urban planning regulations available in the BCNROC Open Knowledge Repository of the Barcelona City Council. This approach provides a comprehensive description of the regulations enacted by the municipality to govern the location of food establishments. On the other hand, the quantitative approximation to food retail in the city is made possible by the open database that the City Council has been preparing periodically for a decade. The most recent iteration of the census, titled *Cens de locals en planta baixa destinats a activitat econòmica de la ciutat de Barcelona* (Census of first-floor premises intended for economic activity in the city of Barcelona), was completed in 2022 and published in 2024 (Ajuntament de Barcelona, 2024). The census is meticulously conducted through a fieldwork process that systematically visits all first-floor premises in the city, which geolocates the activities and classifies them according to the products they sell or services they offer. This database is processed in this research using GIS systems to quantify the establishments and map their position in the city. Utilizing data analysis techniques, the information is then graphically delineated into layers and the same GIS systems are used to produce heatmaps—which facilitate the identification of stores selling similar products within a 300-meter radius, offering a comprehensive view of the food suppliers' dynamics, as shown in Figure 2—and isochrone maps (as in Figures 3, 4, and 5) to illustrate the extension of market halls' influence across the city.

3. A Quantitative Approach to Barcelona's Supply System

The current distribution of food suppliers in Barcelona is the result of nearly two centuries of public policies aimed at progressively strengthening the food system. This system is unique in its presence of 39 public market halls, which are homogeneously distributed throughout the city, thereby ensuring access to fresh produce. Due to the compactness of the urban fabric, nearly a third of the city's households (31.51%) had a public market hall within 400 meters in 2023 (Gomez-Escoda & Fuertes, 2024). The food provision through public suppliers is complemented by a dispersed network of 1,457 privately owned specialty stores, which sell a variety of products, and 2,485 supermarkets (Ajuntament de Barcelona, 2024). Concurrently, the abundance of food providers reflects the urban compactness of the city, as illustrated in Figure 1.

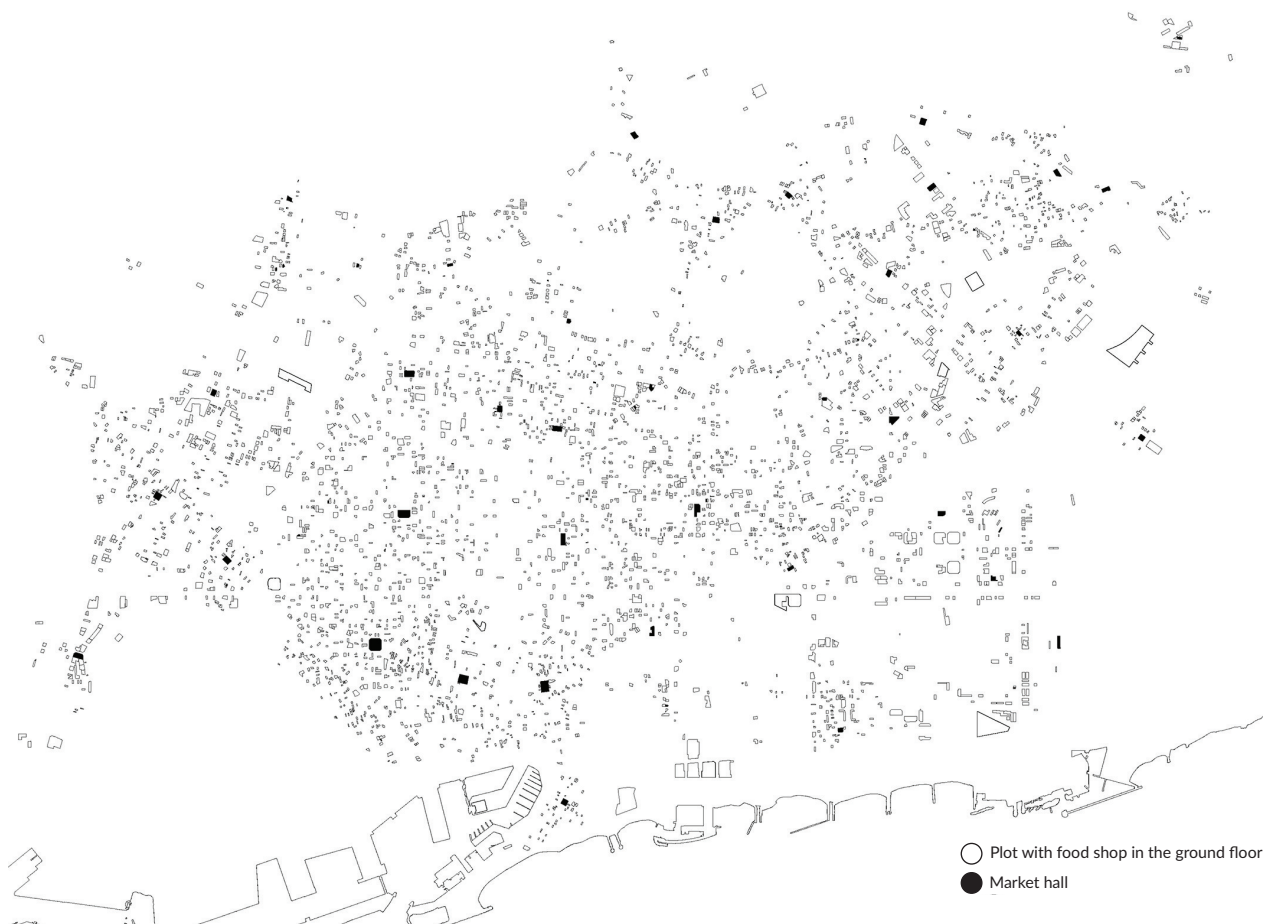


Figure 1. Barcelona's food supply, 2024. Source: Author's elaboration.

Barcelona has one food shop for every 200 inhabitants. Consequently, the city can be considered, with few exceptions, a food oasis. With the exception of market halls, fresh food establishments can be categorized into seven primary groups: eggs and poultry; fish; meat and pork; mixed foods; fruit and vegetables; bread; and supermarkets. The distribution of these establishments is heterogeneous, with some being placed inside the market halls and others on the ground floors of mixed-use buildings.

As presented in Table 1, a comprehensive analysis of the available data reveals a distinctive sidewalk landscape, characterized by a significant presence of food retailers. It is noteworthy that markets tend to

house food retailers specializing in perishable or temperature-sensitive produce, with approximately 25% of the 7,500 fresh produce shops in Barcelona situated within public market buildings. Whilst supermarkets, bakeries, and greengrocers have a greater presence on the ground floors of urban markets than within the market buildings themselves, the opposite is true of butchers and delicatessens, which are found both inside and outside. Fish, egg, and poultry shops, conversely, are mostly concentrated inside the market. Finally, as Table 1 shows, there are more than twice as many specialized shops selling a particular type of food as there are general supermarkets.

Table 1. Number of shops and market stalls offering a given type of food in 2024.

	Stalls in market halls	Shops on ground floors	Total per category	Ground floors/market halls
Eggs and poultry	240	25	265	10%
Fish	338	124	462	37%
Meat and pork	477	559	1,036	117%
Mixed foods	262	363	625	139%
Fruit and vegetables	301	749	1,050	249%
Bread	16	1,529	1,545	9,556%
Supermarkets	24	2,485	2,509	10,354%
TOTAL (except bread and supermarkets)	1,618	1,820	3,438	112%
TOTAL	1,658	5,834	7,492	351%

Source: Author's elaboration.

For establishments with a stronger presence on the ground floors than within the market buildings themselves, several reasons can be identified. First, the large presence of fruit and vegetable shops can be explained by a minimal initial investment requirement, due to the absence of significant infrastructure needs and the low-cost nature of the products offered. Consequently, these small businesses tend to function as arrival infrastructures (Bovo, 2020) and can work as social elevators (Blennerhassett et al., 2022) for immigrant communities, particularly those hailing from countries such as Morocco, India, and Pakistan. Second, the large number of bakeries can be explained because they play an important role in serving prepared food to the floating population, such as tourists and workers. These are establishments that can serve prepared food to take away without the need for a kitchen, which means that, although they sell the most essential of products, they are, in most cases, closer to catering services. It is, therefore, understandable that they require opening hours and operate more efficiently. Furthermore, the sale of bread, widely regarded as a staple food, has historically been subject to specific regulatory frameworks. The initial ovens utilized for the baking of dough were in limited numbers and required substantial infrastructure, given the elevated temperatures—subsequently supported by electrical power—attained within bakery environments (Corteguera, 2016; Feliu, 2016; López Guallar, 2016). Finally, supermarkets' inventory extends to a broad assortment of foodstuffs, encompassing dry, packaged, prepared, and frozen items. In addition to this, they offer a range of household products, including cleaning and hygiene products, so that one-stop shopping for food and other basic necessities can be resolved in a single act. In addition, they extend their opening hours to overlap with the end of the longest working days; when the less central markets are open only one or two afternoons a week.

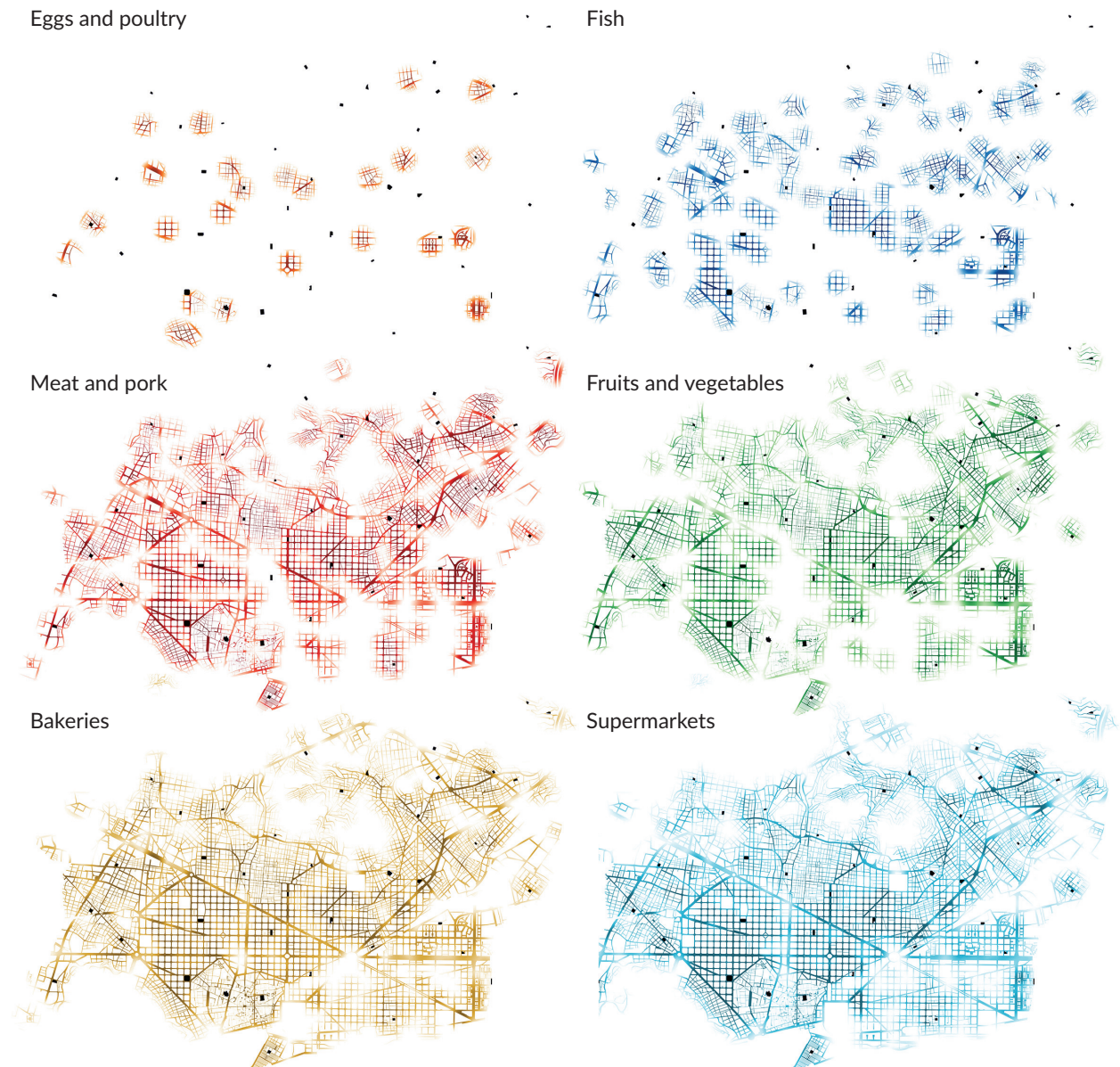


Figure 2. Food shops per type and density of location in 2024. Source: Author's elaboration.

The distribution of food suppliers across the city offers insights into its morphology and helps anticipate predominant land uses, as shown in Figure 2. The series of maps is based on establishing heatmaps between shops selling each type of food and stores selling similar products within a 300-meter radius. In the heatmap, darker shades indicate a higher concentration of similar products while lighter shades signify lower intensity. The blank areas in the heatmaps indicate places with no food within a five-minute walk.

In the lower section, bakeries and supermarkets provide a comprehensive snapshot of urban structure, with some blanks in notable areas such as university districts to the west, elevated areas to the north, major transportation hubs to the northeast, and parks located to the southeast. Despite these gaps, these two types of establishments effectively reflect the urban layout. Each supermarket serves approximately 600 residents, while each bakery serves slightly over 1,000. As demonstrated by the analysis and numerical

data presented in Table 1, the establishment of these two types of stores was not contingent upon the presence of markets, thereby validating their dissemination throughout the city.

An intriguing comparison can be made between the distribution patterns of meat and fruit shops. Although fruit shops are nearly twice as numerous as meat shops outside of markets, both types of establishments exhibit similar gaps in service coverage. Moreover, fruit shops expand their reach to peripheral areas, including those near major transportation stations, while meat shops have a more limited presence in certain central thoroughfares. Both types of shops have a less significant presence in historic districts, with fruit shops being more scattered in these areas. In the old town, three markets are located within 1.5 kilometers of each other, which concentrate the majority of butchers in the neighborhood. The blank areas correspond to urban voids and zones with low population density but high activity intensity on the upper floors. This is expected given the connection between these establishments and domestic cooking.

Finally, although fishmongers and poultry-egg shops differ in their physical presence, they exhibit similar tendencies to cluster in less central neighborhoods. This trend is particularly noticeable in areas undergoing urban densification, facilitated by structured grid development. Fishmongers are more reliant on markets, with their trade concentrated around these sites, whereas poultry shops tend to fill gaps between market halls. In both cases, these products require refrigeration and cooking to be consumed, making it logical to associate them with households rather than places of activity.

4. Planning the Food Supply: The Evolution of Urban Regulations and the Role of Market Halls in the Distribution System

This section outlines the changes in public policies pertaining to food provisioning over the past two centuries, focusing on four distinct stages characterized by shifts in urban planning regulations and the evolving relationship between market halls and small food shops. They are policies that acted as local answers to the urban theories of that time (Garriga & Garcia-Fuentes, 2015).

4.1. The First Regulations of Food Commerce Through Bylaws (1856–1930s)

The Barcelonan market hall system, defined as an assemblage of “facilities that bring together a set of independent retail establishments, primarily for fresh food, in a publicly owned building” (Ajuntament de Barcelona, 2015, p. 4), originated without a formalized plan in the mid-15th century, with the establishment of the open-air markets in the old town. Over time, the market halls have been adapted to serve a variety of purposes. They have been used as a public forum for discussing issues related to food safety, pricing, transparency, quality assurance, and variety. Additionally, they have provided essential goods and services to new neighborhoods and contributed to the revitalization of commercial fabric (Fuentes & Gomez-Escoda, 2020).

The majority of the eighteen markets constructed in Barcelona before the mid-twentieth century were derived from earlier open-air activities, with evidence of this history manifesting not only in the buildings themselves but also in their relationship with the surrounding area. As markets evolved from a street-based structure to a more formal facility, they retained their designation as a public space and their capacity to concentrate urban activity around food.

The initial point of reference for the documentation of the planning regulations is 1856, which coincides with the construction of the inaugural food markets situated beyond the confines of the old town. These bylaws are indicative of the primary objective of regulating the food supply through the implementation of vendor localization measures. Concurrently, they serve as a testament to the historical interconnection between the food supply and public space: “To sell food in a public place, permission is required from the municipal authority, which will indicate the stall for each vendor” (Ajuntament de Barcelona, 1856, p. 89). These same bylaws end with a single article that refers to three actions: to live, to feed, and to carry—the main actions that the city catalyzes. A concise characterization of each is provided, along with a set of fundamental principles pertaining to their functionality and the dynamics of their coexistence. Concerning the food supply, the nexus with the prevailing concern for health is documented for the first time in the city’s historical record:

The need to live is followed by the need to eat, and here it cannot be overlooked how hygiene, industry, and the rules of law are closely intertwined and linked so that maintenance does not alter the health of the body, so that sellers do not scatter articles through deceptive measures, and finally so that the people who contract in shops and markets maintain the good faith and order necessary in such a populous city. (Ajuntament de Barcelona, 1856, p. 189)

In the following bylaws, drafted in 1891—whose wording is repeated almost identically in the following Ordinances in 1923—two complete chapters are dedicated to regulating the supply of food in the city: the first (chapter 32) to markets, and the second (chapter 33) to the preparation and sale of foodstuffs (Ajuntament de Barcelona, 1891, 1923). Two facts stand out in these more extensive rules. On the one hand, the by-laws specify the opening hours of market halls—from 4 a.m. to 10 p.m. in summer and from 5:30 a.m. to 9 p.m. in winter. These extended operational hours offer insight into the enduring connection between the urban environment and the fresh food stalls—operated by farmers and producers who traveled from the hinterlands to supply the city with fresh produce. Conversely, the ordinances emphasize the spatial characteristics of the stalls, the freshness of the food sold in them, and the conditions of preparation and sale of each product. This aligns with the understanding of food supply as a matter of public health.

4.2. Public Protectionism in Times of Autarchy (1939–1975)

The bylaws drafted in 1947 were shaped by a context of self-sufficiency in a city struggling with food shortages. The country was by then in a state of autarchy under the Francoist dictatorship that lasted between 1939 and 1975, a fact that translates into interventionism in the regulation of food establishments.

According to this, the bylaws set, for the first time, distances between markets and other food shops: Not all vendors were controlled by the public forces, and those outside the markets were understood as competitors. In this context, groceries, delicatessens, dairies and poultry, hunting and salt fishing, cooked legumes, fruits and vegetables, fresh fish and dairies, and bakeries may not be established less than 300 meters from the nearest market hall, counting the distance from the center of the market door closest to the establishment. Other premises would respect longer distances: horse butcher shops (350 meters) and butcheries and pork shops (750 meters). Additionally, a distance of 300 meters to any other type of food shop was to be respected. In this manner, the initial regulatory framework was devised, whereby licenses were granted on a first-come, first-served basis, taking into account the relative distances in space. For the same reasons as food procurement control, the regulations monitored the monopoly and prevented the same owner from having stores both outside and inside market halls (Ajuntament de Barcelona, 1947).

After the initial regulatory framework, which was predicated on the distances between food stores to regulate density and the monoculture of uses, the municipal council initiated the first systematic intervention in the market network, which had remained minimally operational during the post-civil war period (1936–1939). In a context where the modernization of food distribution in Europe was leading to the disappearance of market halls (Guàrdia & Oyón, 2010), the food supply system in Barcelona was reinforced by generating a system of facilities intended to strengthen small neighborhood centers, reutilizing the existing market halls or building new ones, occupying spaces based on the opportunity and availability of land in dense urban areas. The objective was to extend the market system throughout the territory while guaranteeing the supply of fresh food to the population of an expanding city, where supermarkets and self-service stores had not yet begun to be established. As part of this strategy, initiated in 1957, half of the existing market halls were constructed.

At the time, a total of 22 markets were in operation, and an additional 27 were proposed. Of these, 14 were constructed, representing a 50% completion rate. The markets constructed during this period provided essential facilities to areas of the city that had emerged due to social necessity, coinciding with the development of mass housing estates in peripheral neighborhoods. The city was undergoing rapid growth, coping with the arrival of immigrant populations from other regions of Spain, and the construction of markets was temporarily transferred to private entities. The objective was to ensure the continued provision of fresh food in urban areas, with the maintenance of the markets' public status being secondary. Market halls were the first infrastructure to be provided to these neighborhoods.

With the market system strengthened, a new bylaw was drafted in 1968. The first specific regulation on markets was drawn up, regulating the rights, obligations, and behaviors of vendors and buyers, the cleanliness



Figure 3. Proximity areas around market halls in 1957. Existing market buildings (blue) and proposals for extension of the system with new halls (magenta). Source: Author's elaboration.

and hygiene of common areas and individual stalls, the shape, materials, and dimensions of stalls, the types of food products that could be sold in each type of stall, and the locations and conditions of food storage (Ajuntament de Barcelona, 1968). This was a holistic regulation whose original wording has been maintained throughout successive revisions, until the most recent one, in force since 2016. The birth of the food system in which public providers were one of the backbones of urban health in the city can be dated back to this pre-democratic period.

4.3. A Public Bet Into the Food System: An Urban Institute to Manage Markets and a Public Plan to Regulate Food Retail (1986–2011)

In 1986, a new public governance document, the Pla d'Establiments Comercials Alimentaris de Barcelona (Barcelona Food Establishment Plan—PECAB), was drafted to implement a model for reform and expansion that would establish municipal markets as the central point of the fresh food distribution network. The PECAB was conceptualized in a period marked by substantial shifts in the food supply landscape. This was due to several factors, including the introduction of new technologies which affected food production and distribution. These included the relocation of productive sources, the spread of cold storage, and the increased use of artificial preservatives. Furthermore, shifts in dietary and consumption patterns, including the advent of packaged foods, the integration of women into the labor force, and a decline in the time allocated to domestic responsibilities, also contributed to this transformation (Fuertes & Gomez-Escoda, 2020). In this context, the introduction of self-service in food purchasing—supermarkets—transformed the customer into an autonomous entity, effectively rendering the stallholder obsolete. The scale of food provisioning underwent a significant transformation with the advent of large shopping malls linked to metropolitan infrastructure. This introduced private mobility into the supply process, facilitating the introduction of packaged products that were easily transportable, stored, and had a longer shelf life than fresh produce. This shift imparted a sense of modernity to food, leading to a sudden transformation in the markets, which acquired an aging quality that they had previously carried with dignity.

The aforementioned changes arrived in Barcelona later than in other European cities, partly due to the 37 years of dictatorship that preceded them. However, this delay proved to be crucial for the survival and subsequent consolidation of the markets in the city. At the time, the advent of novel retail formats, such as supermarkets and expansive commercial zones in peripheral locations, stood in stark contrast to an urban fabric where commerce was dispersed and operated on a modest scale. In fact, 90% of shops were less than 60 sqm in size, with an average area of 36 sqm per establishment. This small-scale constellation attracted the attention of the PECAB authors, who perceived an opportunity to reinforce it and replicate it deliberately across the territory to concentrate food retail around the markets (Ajuntament de Barcelona, 1986).

The initial phase of the strategy entailed a reduction in the number of shops and an increase in their size. A minimum area for sales rooms was established, ranging from 60 sqm for traditional multipurpose establishments and self-service stores to 400 sqm for supermarkets. In the case of establishments specializing in the sale of fresh food, the minimum area required for sales rooms varied according to the type of product in question. Thus, for the sale of eggs, the minimum area was 20 sqm, while for bread it was 25 sqm. In the case of fruit and vegetables, however, the minimum area was set at 40 sqm. The only exception to this was market stalls, which were permitted a minimum area of 10 sqm. This regulation permitted a dual interpretation, as it provided vendors who lacked the financial resources to rent or maintain

a space of such dimensions outside the market with a shelter for their activities within municipal facilities. Despite initial objections from merchants and business owners who considered it interventionist in free competition, the last PECAB (2015) was a review, nearly 30 years later, of the document that was launched with the suspension of licenses for food sales premises that did not meet the set recommendations.

The original PECAB aimed to reinforce the system of 40 markets with an additional 15 in positions proximate to those not constructed in 1957. However, these were ultimately not built either. The principal objective of the PECAB 86 was to consolidate the market system that had been inherited. During this period, the construction of new buildings was the exception, with efforts focused on transforming existing ones (Figure 4). The successive revisions of the PECAB modified the polarity areas following the city's growth and the concomitant increase in neighborhood density. In 2011, these areas began to include sectors where the node of the network was no longer a market but a shopping center. By the time the 2015 version was released, there were 13 such sectors included.

A new urban institute, the Institut Municipal de Mercats, was established in 1991 and continues to guide municipal action on food supply to this day aimed to “make the municipal markets the centers of the fresh food distribution network” (Ajuntament de Barcelona, 2011, p. 32). Concurrently, a reform policy has been implemented to restructure the market halls since the year 1990. The renewal of buildings since has consistently addressed several recurring issues, with each market receiving a bespoke response. On the one hand, several constants can be identified, including a reduction in the number of stalls while increasing their surface area, the management of goods and waste in a basement level, modifications to environmental conditions in the interior space, and the incorporation of a supermarket and a public car parking. In the first

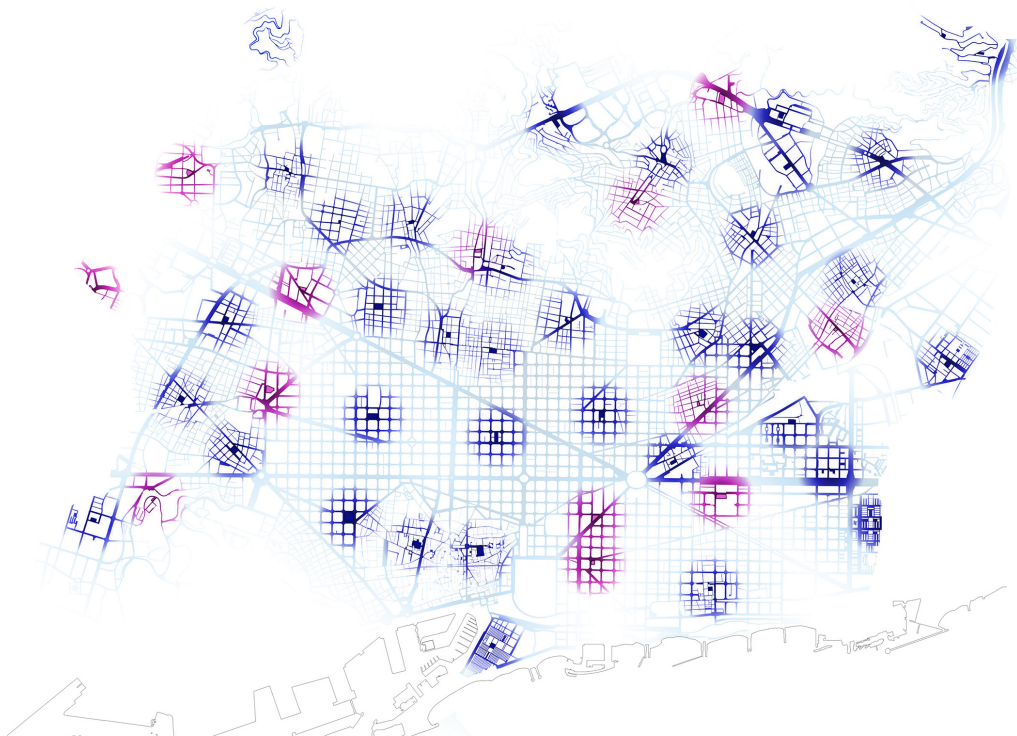


Figure 4. Proximity areas around market halls in 1986. Existing market buildings (blue) and proposals for extension of the system with new halls (magenta). Source: Author's elaboration.

case, the objective was to augment individual purchase transactions with supplementary non-food merchandise, a strategy that supermarkets could implement. In the second case, the initiative sought to capitalize on the construction or renovation of existing facilities and the necessity for a basement to accommodate logistics operations. This approach involved introducing a publicly managed parking scheme in the basement, thereby reinforcing an additional strategy: meeting the demand for parking in the neighborhood's central areas while minimizing the presence of vehicles in public areas as much as possible.

4.4. The Milan Pact Aftermath: An Expansion Backed in the Public Space Layout (2015–2025)

In 2017, as a consequence of the Milan Urban Food Policy Pact, a new strategy was initiated to establish eight farmers' markets, each comprising 15 stalls. The objective was to provide direct selling spaces for producers, offering fresh, seasonal, and local food. The new markets were placed in streets and squares throughout the city, reversing the original urban ordering initiative of the initial market buildings and reinstating food sales in public spaces (Figure 5). In contrast to the street markets of the 19th century, which gave rise to the market system in an attempt to order the city, these markets coexist with busy public spaces that have recently been redesigned to accommodate this temporary activity on an intermittent basis.

This strategy of occupying public space with temporary retail should be seen in the context of a series of urban strategies that the city undertook in 2015 and intensified in 2020 after the lockdown caused by Covid-19. These are the Superblocks and Green Axes projects, which reclaim street space previously used for traffic for pedestrians, in some cases through tactical painting and mobile street furniture, and in others through redevelopment projects that provide streets with a shared platform for pedestrians and service vehicles that cannot travel faster than 10 km/h.

In the context of pacifying public space and anticipating the potential consequences of these improvements, including increased rental prices and alterations like activities on the ground floor, the granting of activity licenses was suspended while a Pla d'Usos (Plan of Uses) was drafted for the Eixample district, which was transforming certain streets. Concurrently, in February 2023, an urban planning strategy for the Eixample district was presented. The objective of this strategy was to limit the presence of bars, restaurants, nightclubs, and food shops in the area, to avoid saturation and ensure a balance of uses and the coexistence of users. This regulatory instrument originates from the Pla Especial d'Establiments de Concurrencia Pública i Altres Activitats (Special Plan for Public Establishments and Other Activities), which was implemented in the early 1990s. The primary objective of this instrument was to regulate the implementation of specific activities within delineated neighborhoods, thereby achieving equilibrium between the uses generated by these activities and minimizing their impact. The first district to implement such a plan was the old town of Barcelona, Ciutat Vella, in 1992. The plan was subsequently revised on several occasions, in 1997, 2000, 2005, 2010, and 2018 (Ajuntament de Barcelona, 2018). The 2023 version introduced a novel focus on food activities, anticipating the transformation of the retail fabric in the context of public space layout renovation. It was hypothesized that essential establishments selling food would be the first places to undergo gentrification processes in areas undergoing public space renovation, and this planning strategy was the anticipated response to this. To circumvent this issue, a series of regulations was implemented, stipulating minimum distances between establishments and maximum density limits. Consequently, the allocation of licenses was subject to a first come, first served basis.

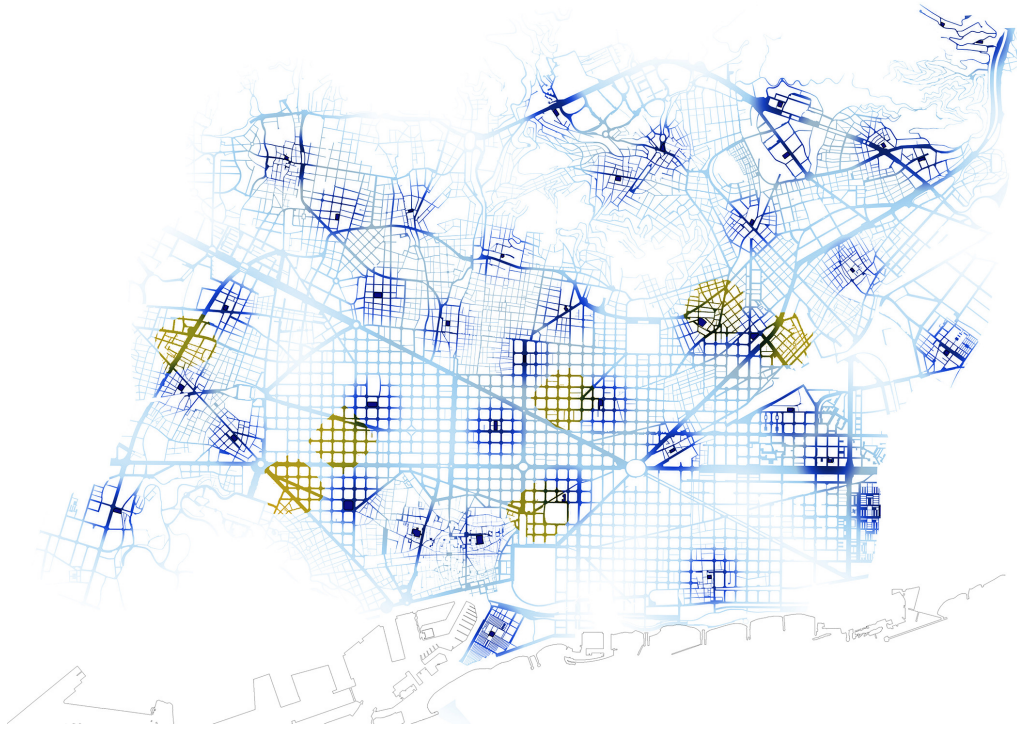


Figure 5. Proximity areas around market halls in 2024. Market buildings (blue) and open-air weekly farmers' markets (ochre). Source: Author's elaboration.

5. Discussion

In recent years, the intersection of food and urban life and form has garnered significant attention across disciplines such as urbanism, sociology, and urban geography. Concerning dense urban contexts, this interest has been driven by two key developments: the growing focus on the ordinary and everyday aspects of urban living, and the increasing consumption of land for food-related uses such as fast-food outlets, cafes, restaurants, and markets (Parham, 2015). These trends are particularly evident in the visible proliferation of food establishments in tourist and gentrified neighborhoods of European cities which, in turn, can result in the so-called “foodification” of urban space (Bourlessas et al., 2021; Joassart-Marcelli & Bosco, 2023).

Food is presented as an integral element in the temporal and spatial dimensions of contemporary urban existence (Ascher, 2005). The ability of food—and gastronomy in general—to activate the space around it is indisputable. Food is capable of stimulating and transforming space, testing it, dynamizing it, and temporarily or definitively modifying its perception and use (Mària, 2018), as “food attracts people who attract other people” (Whyte, 1980). The debate is dual in nature due to the consequences that this capacity of food has to model urban environments. On the one hand, food has emerged as a potent cultural concern, celebrated as an alternative art form, a literary genre, and an academic field (Horwitz, 2004) that triggers accelerated urban transformations. On the other hand, food supply is a basic service on which the health of citizens depends.

From this standpoint, it is essential to establish guidelines so that urban design and planning professionals take into account these spatial and temporal aspects of food supply. It is crucial to understand that the

configuration of suppliers will be decisive in the health of the city and to acknowledge the influence of public urban planning policies and regulations on the configuration of the food supply system and the subsequent impact on equity in accessing food. This requires a shift in perspective, whereby the responsibility for ensuring a healthy and equitable food supply is recognized as both technical and public, rather than being entrusted solely to individual decisions. In this regard, the presented case study emphasizes the role that urban planning has played in shaping the spatial distribution of food suppliers.

The case of Barcelona is distinctive in that the renovation of the market halls preserved their function as food providers, a departure from the trend of converting them into food courts as has occurred in numerous cities (Drain, 2015; Eckenschwiller, 2019; Franzén, 2005; González & Waley, 2013). In these novel spaces, food remains the catalyst for surrounding activity, albeit within a gentrification process that diverts it from its role as a fundamental service and a vital product associated with public health. Another distinctive feature of this case study is the integration of urban planning regulations—once used to limit the proliferation of food establishments—with recent reforms to the city’s public spaces. These regulations establish the distances between establishments, define their surface areas, or set their maximum density limits, thereby contributing to the health and well-being of the population from the public sector.

6. Conclusion

The evolution of food systems in urban environments highlights the profound interplay between urban planning, socio-economic structures, and public health outcomes. The case of Barcelona illustrates how strategic public policies and infrastructural designs can mitigate spatial inequities in food access, ensuring that proximity to fresh food becomes a shared benefit rather than a privilege. By leveraging an integrated system of public markets which in turn organize a dispersed constellation of specialty food shops, Barcelona has created a robust framework that addresses both the physical and socio-economic dimensions of food security. This model underscores the necessity of embedding food supply considerations within urban planning to promote inclusive and sustainable urban living.

The urban regulations concerning food in Barcelona were developed without a comprehensive, long-term strategy. Instead, they were intended to address the fluctuating issues of oversupply and scarcity in a given period. However, an examination of their historical progression reveals the pivotal function of governance in fostering resilient and equitable food systems. From the 19th century bylaws to contemporary initiatives influenced by the Milan Urban Food Policy Pact, the city has prioritized public interventions that align food supply with public health and urban heritage—through the architectures of public market halls. This case study demonstrates the influence of public urban planning policies and regulations on the spatial configuration of the food supply system, highlighting the implications for spatial equity in accessing food. It serves as a compelling paradigm for other metropolitan regions seeking to address contemporary urban challenges with the pressing global need for food security and environmental sustainability. As cities globally continue to grapple with diverse urban forms and food access dynamics, the principles underpinning Barcelona’s system—proximity, equity in access, and public accountability—provide a scalable blueprint for addressing these challenges.

The research presents some limitations both from a methodological and conceptual perspective to be implemented in future studies.

Firstly, before the advent of the first automated censuses, no information on the food suppliers' physical distribution—apart from the location of the market halls—was available. However, a comprehensive review of historical records concerning activity licenses could facilitate the reconstruction of the image of food stores in the city. This would contribute to a more complete understanding of Barcelona's food supply and the spatial impact of different regulations, including the appropriation or allocation of establishments (from the markets or among themselves). However, it should be noted that this extends previous research, requiring extensive archival consultation to ensure accurate and comprehensive findings.

Secondly, the research approaches markets and the food system in a favorable light, conceptualizing them as public instruments with the capacity to transform how the city is fed. However, there is a lack of inquiry into how many of these markets have already become tourist attractions and the primary mechanisms for displacing the local population from the most central neighborhoods of the city. This hypothesis could be further investigated through research examining consumer habits in neighborhoods experiencing the most pronounced signs of gentrification.

Finally, the study of equity in access to food is conducted from the perspective of a pure urban form, establishing distances and numbers of suppliers without considering population density. A study that incorporates the relationship between food suppliers and the population they serve would elucidate the strengths and weaknesses of the system. Furthermore, this approach to the population should be informed by its composition, including age, gender, and social income, to generate more precise planning recommendations. However, the preliminary modeling presented in this research was necessary to determine a network proportionate to the capacity, influence, and frequency of use of the market system.

Despite the described constraints, this research can be considered a first step to rethink the public food commercial fabric in compact metropolises to promote equal access to food. Therefore, researchers and professionals can use the established methods to evaluate other realities in the same way that the results presented can be considered a starting framework for future research that addresses a deeper analysis of urban food planning and design in Barcelona.

Acknowledgments

The author would like to express gratitude to Professor Pere Fuertes, co-author of several research papers related to this work, for facilitating a fruitful discussion that significantly contributed to the development of the arguments presented in Section 4 of this article. Additionally, gratitude is extended to Lluís Frago and Alex Morcuende for their insightful contributions in the course of the URBANSOSTEN research project, which have significantly enhanced the present work.

Funding

This investigation is part of URBANSOSTEN-LOCALRETAILBCN Sostenibilitat urbana i comerç de proximitat a Barcelona i la seva àrea metropolitana (Urban Sustainability and Local Commerce in Barcelona and Its Metropolitan Area), an eighteen-months research project funded by Ajuntament de Barcelona and La Caixa Foundation.

Conflict of Interests

The author declares no conflict of interests.

Data Availability

Due to the nature of the research, data sharing is not applicable to this article.

References

- Ajuntament de Barcelona. (1856). *Ordenanzas municipales de la edificación*. <http://hdl.handle.net/11703/96466>
- Ajuntament de Barcelona. (1891). *Ordenanzas municipales de la edificación*. <http://hdl.handle.net/11703/100152>
- Ajuntament de Barcelona. (1923). *Ordenanzas municipales de la edificación*. <http://hdl.handle.net/11703/96469>
- Ajuntament de Barcelona. (1947). *Ordenanzas municipales de la edificación*. <http://hdl.handle.net/11703/96471>
- Ajuntament de Barcelona. (1968). *Ordenanzas municipales sobre mercados*. <http://hdl.handle.net/11703/96461>
- Ajuntament de Barcelona. (1986). *Pla especial d'equipament comercial alimentari de Barcelona PECAB*. <http://hdl.handle.net/11703/91552>
- Ajuntament de Barcelona. (2011). *Pla especial d'equipament comercial alimentari de Barcelona PECAB*. <http://hdl.handle.net/11703/91482>
- Ajuntament de Barcelona. (2015). *Pla especial d'equipament comercial alimentari de Barcelona PECAB*. <http://hdl.handle.net/11703/86879>
- Ajuntament de Barcelona. (2018). *Pla especial urbanístic d'ordenació de les activitats de pública concurrència, comerços alimentaris, serveis turístics i altres activitats al Districte de Ciutat Vella (Pla d'usos de Ciutat Vella)*. <http://hdl.handle.net/11703/108624>
- Ajuntament de Barcelona. (2024). *Cens de locals en planta baixa destinats a activitat econòmica de la ciutat de Barcelona*. <https://opendata-ajuntament.barcelona.cat/data/en/dataset/cens-activitats-comercials>
- Ascher, F. (2005). *Le mangeur hypermoderne: Une figure de l'individu éclectique*. Editions Odile Jacob.
- Barton, H., & Grant, M. (2013). Urban planning for healthy cities. A review of the progress of the European Healthy Cities Programme. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, 90(Suppl 1), 129–141. <https://doi.org/10.1007/s11524-011-9649-3>
- Blennerhassett, C., Moore-Cherry, N., & Bonnin, C. (2022). Street markets, urban development and immigrant entrepreneurship: Unpacking precarity in Moore Street, Dublin. *Urban Studies*, 59(13), 2739–2755. <https://doi.org/10.1177/00420980211040928>
- Bose, P. S. (2024). Getting people to food and food to people: Considering transportation barriers and food access in the future of food. *Geographical Review*, 115(1/2), 1–15. <https://doi.org/10.1080/00167428.2024.2383459>
- Bourlessas, P., Cenere, S., & Vanolo, A. (2021). The work of foodification: An analysis of food gentrification in Turin, Italy. *Urban Geography*, 43(9), 1328–1349. <https://doi.org/10.1080/02723638.2021.1927547>
- Bovo, M. (2020). How the presence of newly arrived migrants challenges urban spaces: Three perspectives from recent literature. *Urban Planning*, 5(3), 23–32. <https://doi.org/10.17645/up.v5i3.2894>
- Cabannes, Y., & Marocchino, C. (Ed.). (2018). *Integrating food into urban planning*. UCL Press.
- Carmona, M. (2018). Place value: Place quality and its impact on health, social, economic and environmental outcomes. *Journal of Urban Design*, 24(1), 1–48. <https://doi.org/10.1080/13574809.2018.1472523>
- Conrad, Z., Niles, M. T., Neher, D. A., Roy, E. D., Tichenor, N. E., & Jahns, L. (2018). Relationship between food waste, diet quality, and environmental sustainability. *PLOS One*, 13(4), Article 0195405. <https://doi.org/10.1371/journal.pone.0195405>

- Cooksey-Stowers, K., Schwartz, M. B., & Brownell, K. D. (2017). Food swamps predict obesity rates better than food deserts in the United States. *International Journal of Environmental Research and Public Health*, 14(11), Article 1366. <https://doi.org/10.3390/ijerph14111366>
- Corburn, J. (2004). Confronting the challenges in reconnecting urban planning and public health. *American Journal of Public Health*, 94(4), 541–546.
- Corteguera, L. R. (2016). Pa i política als segles XVI i XVII. In M. Renom (Ed.), *Proveir Barcelona. El municipi i l'alimentació de la ciutat* (pp. 73–85). Museu d'Història de Barcelona; Ajuntament de Barcelona; Institut de Cultura.
- Drain, K. (2015, August 27–29). *Strategies and conflicts of market hall renovation: The case of Helsinki* [Paper presentation]. The Ideal City: Between Myth and Reality—Representations, Policies, Contradictions and Challenges for Tomorrow's Urban Life, Urbino, Italy.
- Dumas, B. L., Harris, D. M., McMahon, J. M., Daymude, T. J., Warnock, A. L., & Moore, L. V. (2021). Prevalence of municipal-level policies dedicated to transportation that consider food access. *Preventing Chronic Disease*, 18, Article 210193. <http://doi.org/10.5888/pcd18.210193>
- Eckenschwiller, C. (2019, June 2). Food halls are the new food courts (with an authentic twist). *Hospitality Insights*. <https://hospitalityinsights.ehl.edu/food-halls-trends>
- Engel, E. (1857). *Die Productions- und Consumptionsverhältnisse des Königreichs Sachsen*. Statistics Bureau of Saxony.
- Fazeli Dehkordi, Z. S., Khatami, S. M., & Ranjbar, E. (2022). The associations between urban form and major non-communicable diseases: A systematic review. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, 99(5), 941–958. <https://doi.org/10.1007/s11524-022-00652-4>
- Feliu, G. (2016). El pa al segle XVIII: Continuitats i canvis. In M. Renom (Ed.), *Proveir Barcelona. El municipi i l'alimentació de la ciutat* (pp. 215–229). Museu d'Història de Barcelona, Ajuntament de Barcelona & Institut de Cultura.
- Food and Agriculture Organization. (1996). *Report of the World Food Summit*.
- Food and Agriculture Organization of the United Nations, International Fund for Agricultural Development, United Nations Children's Fund, World Food Programme, & World Health Organization. (2024). *The state of food security and nutrition in the world 2024: Financing to end hunger, food insecurity and malnutrition in all its forms*. Food and Agriculture Organization. <https://doi.org/10.4060/cd1254en>
- Franzén, M. (2005). *The market hall revisited*. Linköping University, Department of Culture Studies.
- Fuertes, P., & Gomez-Escoda, E. (2020). Supplying Barcelona. The role of public market halls in the construction of the urban food system. *Journal of Urban History*, 48(5), 1121–1139. <https://doi.org/10.1177/0096144220971821>
- Garriga, S., & Garcia-Fuentes, J. M. (2015). The idealization of a 'Barcelona model' for market halls renovation. In G. Cinà & E. Dansero (Eds.), *Proceedings of the 7th AESOP International Food Planning Conference* (pp. 336–342). Politecnico di Torino.
- Generalitat de Catalunya. (2023). *Anuari Estadístic de Catalunya*. Institut d'Estadística de Catalunya. <https://www.idescat.cat/indicadors/?id=basics&n=10425>
- Gomez-Escoda, E., Crosas, C., & Berra, M. (2022). Forms and patterns of mixtcity in compact cities: Mixed-use synergies in the Sagrada Família neighbourhood of Barcelona. *Journal of Urban Design*, 28(4), 375–396. <https://doi.org/10.1080/13574809.2022.2128314>
- Gomez-Escoda, E., & Fuertes, P. (2024). Proximity and temporality: The role of weekly markets in the metropolitan food system of Barcelona. In A. A. Kantarek, M. Hanzl, T. Figlus, & Ł. Musiaka (Eds.), *XXIX International seminar on urban form: Urban redevelopment and revitalization—A multidisciplinary perspective* (pp. 379–391). Lodz University of Technology.

- González, S., & Waley, P. (2013). Traditional retail markets: The new gentrification frontier? *Antipode*, 45(4), 965–983. <https://doi.org/10.1111/j.1467-8330.2012.01040.x>
- Guàrdia, M., & Oyón, J. L. (Ed.). (2010). *Hacer ciudad a través de los mercados*. Museu d'Història de Barcelona, Ajuntament de Barcelona & Institut de Cultura.
- Harris, P., & De Leeuw, E. (2023). Infrastructure and health: Laying down the big connections for well-being. *Oxford Open Infrastructure and Health*, 1, Article ouac002. <https://doi.org/10.1093/ooih/ouac002>
- Horwitz, J. (2004). Eating space. In J. Horwitz & P. Singley (Eds.), *Eating architecture* (pp. 259–273). The MIT Press.
- Hunter, J. A., Hollands, G. J., Pilling, M., & Marteau, T. M. (2019). Impact of proximity of healthier versus less healthy foods on intake: A lab-based experiment. *Appetite*, 133, 147–155. <https://doi.org/10.1016/j.appet.2018.10.021>
- Joassart-Marcelli, P., & Bosco, F. J. (2023). Best for foodies: Food, digital media and planetary gentrification. *International Journal of Urban and Regional Research*, 48, 74–93. <https://doi.org/10.1111/1468-2427.13212>
- Kaczynski, A. T., Eberth, J., Stowe, E. W., Wende, M. E., Liese, A., McLain, A. C., Breneman, C. B., & Josey, M. J. (2020). Development of a national childhood obesogenic environment index in the United States: Differences by region and rurality. *International Journal of Behavioral Nutrition and Physical Activity*, 17(1), Article 83. <https://doi.org/10.1186/s12966-020-00984-x>
- López Guallar, M. (2016). El proveïment del pa a Barcelona sota el règim de Nova Planta. In M. Renom (Ed.), *Proveir Barcelona. El municipi i l'alimentació de la ciutat* (pp. 203–214). Museu d'Història de Barcelona, Ajuntament de Barcelona & Institut de Cultura.
- Mackenbach, J. P., Rubio Valverde, J., Bopp, M., Brønnum-Hansen, H., Deboosere, P., Kalediene, R., Kovács, K., Leinsalu, M., Martikainen, P., Menvielle, G., Regidor, E., & Nusselder, W. J. (2019). Determinants of inequalities in life expectancy: An international comparative study of eight risk factors. *The Lancet Public Health*, 4(10), 529–537.
- Mària, M. (2018). Barcelona eats. *Quaderns*, 271, 102–123.
- Marquet, O., & Miralles-Guasch, C. (2015). The walkable city and the importance of the proximity environments for Barcelona's everyday mobility. *Cities*, 42, 258–266. <https://doi.org/10.1016/j.cities.2014.10.012>
- McManus, P. (2023). Infrastructure, health and urban planning: Rethinking the past and exploring future possibilities as a response to Harris & De Leeuw (2022). *Oxford Open Infrastructure and Health*, 1, Article ouac001. <https://doi.org/10.1093/ooih/ouac001>
- Milan Municipality. (2015). *Milan urban food policy pact*. <http://www.milanurbanfoodpolicypact.org>
- Parham, S. (2015). *Food and urbanism*. Bloomsbury Publishing.
- Pineo, H., Zimmermann, N., & Davies, M. (2020). Integrating health into the complex urban planning policy and decision-making context: A systems thinking analysis. *Palgrave Communications*, 2020(6), Article 21. <https://doi.org/10.1057/s41599-020-0398-3>
- Pratt, K. J., Blalock, J., Breslin, L., Kiser, H., Hanks, A., Focht, B. C., Outrich, M., Noria, S., & Needleman, B. (2022). Patient access, utilization, and perceptions of neighborhood and built environment resources. *Obesity Surgery*, 32(2), 416–427. <https://doi.org/10.1007/s11695-021-05788-x>
- Prior, J., Liu, E., de Leeuw, E., Morrison, N., & Tsouros, A. (2023). Urban planning and development for health: Key principles to guide action and change. *Public Health Research and Practice*, 33(4), Article 3342329. <https://doi.org/10.17061/phrp3342329>
- Richardson, K. J., Lewis, K. H., Krishnamurthy, P. K., Kent, C., Wiltshire, A. J., & Hanlon, H. M. (2018). Food

- security outcomes under a changing climate: Impacts of mitigation and adaptation on vulnerability to food insecurity. *Climatic Change*, 147, 327–341. <https://doi.org/10.1007/s10584-018-2137-y>
- Rodger, R. (2019). Urban public health: A historical perspective. In S. Galea, C. K. m. Ettman, & D. Vlahov (Eds.), *Urban health* (pp. 169–178). Oxford University Press.
- Rosenthal, M., & Flood, C. (2019). *Food: Eating tomorrow*. V&A Publications.
- Sáenz de Tejada, C. (2024). Salud y proximidad en Madrid. In C. Crosas & E. Gomez-Escoda (Eds.), *Metro-mix: Proximidad y mixticidad para una ciudad saludable* (pp. 69–73). RU Books.
- Siri, J. G., & Geddes, I. (2022). Mainstreaming health in urban design and planning: Advances in theory and practice. *Cities & Health*, 6(5), 853–857. <https://doi.org/10.1080/23748834.2022.2148844>
- Valls, F., & Clua, A. (2023). Modeling Barcelona sidewalks: A high-resolution urban scale assessment of the geometric attributes of the walkable network. *PLOS One*, 18(7). Article 0284630. <https://doi.org/10.1371/journal.pone.0284630>
- Whyte, W. H. (1980). *The social life of small urban spaces*. Conservation Foundation.
- World Health Organization. (2017). *Urban green space interventions and health: A review of impacts and effectiveness*. <https://www.who.int/publications/i/item/9789289053183>

About the Author



Eulàlia Gómez-Escoda is an architect and holds a PhD in urbanism. She is an associate professor at the Department of Urbanism, Territory, and Landscape (DUTP) at the Universitat Politècnica de Catalunya – BarcelonaTech, where she has taught since 2008 and where she has been deputy director of international relations, at ETSAB-UPC, since 2021. She is a researcher at the Barcelona Laboratory of Urbanism (LUB-UPC).

Reclaiming Food Insecurity in European Urban Policies: Lessons From Public and Community-Based Initiatives

María José LaRota-Aguilera^{1,2}  and Ana Moragues-Faus^{1,2} 

¹ Food Action and Research Observatory (FARO), University of Barcelona, Spain

² Faculty of Economics and Business, University of Barcelona, Spain

Correspondence: María José LaRota-Aguilera (mj.larota.aguilera@ub.edu)

Submitted: 31 October 2024 **Accepted:** 16 June 2025 **Published:** 28 August 2025

Issue: This article is part of the issue “Perspectives on Food in the Sustainable City” edited by Birgit Hoinle (University of Hohenheim), Alena Birnbaum (University of Kassel), and Petra Lütke (University of Münster), fully open access at <https://doi.org/10.17645/up.i395>

Abstract

Cities are at the forefront of socio-ecological challenges, including food insecurity, rising inequalities, and environmental degradation. Despite a decade of progress in urban food policies, food insecurity remains a low priority in European cities, even as community and public responses increase, revealing persistent challenges in integrating different sectors in food policy-making. Limited evidence and conceptualisations further hinder the development of effective interventions that combine food availability and accessibility with sustainability and empowerment goals. This study proposes an analytical framework grounded on the High Level Panel of Experts on Food Security and Nutrition’s six-dimensional approach (Availability, Access, Utilisation, Stability, Agency, and Sustainability) to address these gaps. Applying this framework to the case of Barcelona, the study maps local food insecurity responses and develops a new typology of initiatives, which range from targeted access programs to more comprehensive efforts that incorporate multiple dimensions such as agency and sustainability. The analysis highlights significant tensions within and between initiatives, particularly at the intersection of sustainability, agency, and access. Tensions reflect broader structural challenges in European urban food policies, where weak sectoral integration across economic, environmental, and justice areas limits effective responses to food insecurity. More comprehensive initiatives offer bottom-up insights into navigating these tensions and trade-offs. We argue that embracing all six food security dimensions can support urban policies to better address food insecurity by redesigning individual initiatives and leveraging their diversity and synergies from a place-based perspective. A more critical, collaborative, multidimensional, and territorial approach that explicitly connects urban food policies with poverty reduction is essential for building inclusive, resilient, and just urban food systems.

Keywords

agency; community initiative; food security; sustainability; urban food governance; urban food systems

1. Introduction

The food system is a key driver of today's global socio-ecological crisis (Ericksen et al., 2009; Liverman & Kapadia, 2012; Richardson et al., 2023; Willett et al., 2019). From production to waste, current food practices contribute to environmental degradation, social inequality, and major public health challenges (Crippa et al., 2021; FAO et al., 2021, 2024). Various forms of malnutrition persist worldwide, reflecting deep misalignments between food system dynamics, sustainability goals, and food security outcomes (Swinburn et al., 2019; UNICEF et al., 2021). Cities concentrating on population and food consumption (FAO, 2017) are increasingly affected (High Level Panel of Experts on Food Security and Nutrition [HLPE], 2024). By 2050, the urban population will double, posing a significant challenge for society: to deliver food security—that is, “all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (HLPE, 2020)—without further degrading our ecosystems or increasing inequalities.

In this context, cities are also pivotal in driving sustainable change within our food systems (Battersby et al., 2023; Forster et al., 2023; HLPE, 2024; UN-Habitat, 2022). Cities can engage communities directly and implement innovative solutions. They can play a crucial role in transforming food systems towards models prioritising sustainability, resilience, and inclusivity, making them essential actors in tackling the global food security challenge (HLPE, 2024).

These global challenges are also increasingly evident in Europe, which, despite being one of the world's most affluent regions, has 21% of its population (94.6 million people) at risk of poverty or social exclusion (Eurostat, 2023). A rise in food insecurity mirrors this economic vulnerability: The number of people experiencing moderate or severe food insecurity increased from 48.6 million in 2019 to 60.7 million in 2023, with urban populations being more affected than rural ones (FAO et al., 2023). This situation reveals a paradox at the heart of European food systems. On the one hand, the growing reliance on food assistance points to widespread difficulties in accessing sufficient, nutritious food (Caraher & Furey, 2018). On the other hand, Europe also faces a rising burden of malnutrition in the form of overweight and obesity (UNICEF et al., 2021). These trends disproportionately impact vulnerable groups, including people with low incomes, women, older adults, those with limited education, people with disabilities, and individuals outside the labour market (European Commission, 2024; Garratt, 2020). Despite numerous studies, pilot projects, and policy innovations (Baker & de Zeeuw, 2015; Calori & Magarini, 2015; Halliday, 2022; Moragues-Faus et al., 2022), urban food insecurity remains insufficiently addressed and low on the European policy agenda.

In the last decade, the urban food community has highlighted the importance of integrated governance to advance positive food system outcomes (FAO, 2018; IPES-Food, 2017; Lang et al., 2009; MacRae, 2011). European cities have played a key role in advancing this governance innovation over the past decades: Nearly 40% of the cities involved in the Milan Urban Food Policy Pact—an international protocol promoting sustainable food systems and urban food policies—are in Europe (Milan Urban Food Policy Pact Secretariat, 2024). Although there is no one definition (see, for example, Moragues-Faus et al., 2017; Sibbing et al., 2019), by and large, integrated governance consists of including multiple actors, sectors, and scales in designing policies and strategies to account for the complex and interconnected challenges and resources required to transform food systems. Despite calls for integration, analyses of specific policies show disconnections across sectors and topics (Doernberg et al., 2019), lack of participation of specific actors (Moragues-Faus,

2020), lack of mechanisms to ensure coherence across scales (Kidd & Reynolds, 2024; Parsons & Hawkes, 2019), and an overall failure to measure the material impacts of these integrated policies in changing specific urban food system challenges, such as food insecurity (Moragues-Faus & Battersby, 2021).

Recent international comparative analyses of urban food policies show that interventions focus primarily on shaping local agricultural systems, sustainable and healthy consumption, and governance (Filippini et al., 2019). For instance, an analysis of 41 global urban food strategies identified four main objectives: strengthening local production and consumption; strengthening the agricultural sector's robustness, sustainability, and innovativeness through promoting agroecology; economic development; and education (Candel, 2020). This research revealed that food security, nutrition, and access are more prominent concerns in urban food strategies in the Global South and North America than in Europe. Studies focused on European countries show similar results. Sibbing et al. (2019) analysed the food policy of 31 Dutch municipalities, finding that they primarily address "health and well-being, the economy, learning/empowerment, and urban-rural linkages; they do not address community development, the environment, social and cultural aspects, and food-security/social justice" (p. 10). Moreover, the integration of food as a cross-cutting aspect in public policies is limited, and the types of instruments used to implement these food strategies are predominantly non-coercive, based on information dissemination and organisational tools such as information campaigns, program monitoring, and collaborative events. Comparable results were found in Germany, where an analysis of 10 cities revealed that food policies remain highly fragmented and based on individual or sectoral initiatives that mainly use instruments like awareness-raising or public procurement (Doernberg et al., 2019). Issues such as food security and food justice are not widely recognised as urgent concerns or relevant frames of reference for urban food policies in the studied cities. Key limitations include insufficient funding, political commitment, and human resources for more ambitious actions. Similarly, few European strategies explicitly reference social justice despite aligning with its goals (Smaal et al., 2021), which may reduce public visibility and political traction.

The disparities between urban food insecurity data, initiatives, and policy action highlight the urgency of addressing food and nutritional insecurity from an integrated perspective that considers sustainability, agency, and social equity in urban areas (Clapp et al., 2022; Moragues-Faus & Battersby, 2021), as well as better understanding the tensions preventing effective integration. In this line, recent contributions highlight the importance of understanding the difference between urban food policies—deliberate processes endorsed by the public sector where different actors can participate—and governance—which includes all the actors shaping urban food systems—as well as how they relate to each other (Moragues-Faus & Battersby, 2021). In this regard, there are actors largely absent or marginal in food policy-making processes, from big corporations to financiers or community initiatives (Battersby, 2017; Brons et al., 2022; Clapp, 2021; Smaal et al., 2021). Community action processes have historically played a central role in tackling food insecurity. Beyond this, they offer innovative approaches to public health challenges, well-being, and sustainable urban development by fostering grassroots resilience, strengthening local food systems, and integrating multi-level strategies (Abdillah et al., 2024; Tarasuk, 2001). Furthermore, community self-organisation fosters place-based resilience, offering a framework for policy responses that enhance social equity and environmental sustainability. However, participation of grassroots initiatives in policy-making processes remains challenging due to limitations in terms of resources (Vara-Sánchez et al., 2021) or opposition to increasingly emerging mainstream policy discourses and frameworks in the food policy realm, such as the UN Food Systems Summit (Canfield et al., 2021; Nisbett et al., 2021).

In this context, our research addresses two critical gaps in current discourse, literature, and practice on urban food insecurity in Europe: the limited integration of food insecurity into European urban policy agendas and the scarcity of studies analysing the reach, diversity, and impact of existing urban food security initiatives (FSIs). We therefore ask: What types of FSI exist in European cities, how do diverse FSIs address the six multidimensional aspects of urban food insecurity, and what are the implications of these results for integrated urban food policy making? To answer these questions, this study mapped and analysed the range, characteristics, and strategies of FSIs currently operating in Barcelona, developing a novel analytical framework based on the six dimensions of food security: availability, access, utilisation, stability, sustainability, and agency (HLPE, 2020). By systematically examining these initiatives, the research aims to understand how urban actors address food insecurity on the ground despite limited policy attention and data. The findings contribute to informing the development of more integrated and equitable urban food policies and governance models that align food security with broader sustainability and social justice goals.

The article is structured as follows: Section 2 presents the case study and methodology. Section 3 details the FSIs identified in Barcelona. Section 4 analyses these initiatives using the HLPE framework and reflects on their policy implications. Finally, Section 5 outlines our contributions to understanding and addressing urban food insecurity in European cities.

2. Methodology

2.1. Barcelona Case Study

Food insecurity is a structural issue in Spain, affecting 13.3% of households, that is, nearly 6.2 million people (Moragues-Faus & Magaña-González, 2022). In 2023, the percentage of the population at risk of poverty or social exclusion rose to 26.5%, impacting 12.7 million people. In Barcelona, approximately 1.6 million residents (97.4%) live where unhealthy food options, such as fast-food outlets and convenience stores, are more prevalent than healthier alternatives, like grocery stores or fresh food markets. These areas, known as “food swamps,” disproportionately affect vulnerable populations, including 106,000 people (6.6%) at risk of poverty (García-Sierra et al., 2024). Moreover, 8.6% of households in the city experience some form of food insecurity, with single-parent families (14.6%) and lower socioeconomic classes (24.8%) being the most affected (Bartoll et al., 2018). Food insecurity affects 23% of the population in neighbourhoods with higher levels of deprivation, while in more affluent areas, it is lower than 2% (Bartoll et al., 2018). These figures underscore persistent structural barriers to accessing adequate food, exacerbated by the Covid-19 pandemic (Moragues-Faus et al., 2022). Malnutrition remains a pressing concern, with overweight rates reaching 65.2% among individuals with very low incomes and 70.2% among women without higher education (Moragues-Faus et al., 2022).

While Barcelona’s situation reflects national and global trends, particularly those of European urban contexts, it also presents unique challenges. The city’s high influx of tourists, and high-skilled migrants (Elorrieta et al., 2022) have contributed to rising housing costs (Comissions Obreres de Catalunya, 2023), pushing many residents into poverty (Blanco-Romero et al., 2018; Forte-Campos et al., 2021). Environmentally, Barcelona’s food system remains highly dependent on external supply chains, faces continued loss of agricultural land (Padró et al., 2020), and generates significant food waste (Binimelis & Roca, 2021), hindering climate change mitigation efforts. Although local administrations actively promote sustainability, encourage local food

sourcing, and reduce reliance on long-distance transportation (Pla Estratègic Metropolità de Barcelona, 2021), access to organic and locally produced food remains uneven across the city. Socioeconomic factors shape distinct food environments, with wealthier neighbourhoods enjoying better access to healthy, organic options while lower-income areas face more limited choices (García et al., 2020). This stark divide has been described as a “tale of two cities” regarding food access (Moragues-Faus & Battersby, 2021), highlighting the urgent need for equitable distribution policies. These challenges are compounded by barriers to accurate food information, a lack of coordination among food system actors, gender disparities, the concentration of power in food distribution, and declining local production capacity (Herrero & Moragues-Faus, 2025).

Barcelona also showcases a unique blend of historical governance, innovative policy frameworks, global collaborations, and active local initiatives around urban food systems (Herrero & Moragues-Faus, 2025). For instance, in 2021, the city was designated as the World Capital of Sustainable Food, with significant changes in food governance dynamics across various scales, prompting the city to become actively involved in Spanish and international food networks (Zerbian et al., 2024). In 2022, Barcelona launched the 2030 Strategy for Healthy and Sustainable Food, developed through a participatory process involving more than 100 local stakeholders and an online citizen consultation. The strategy aims to enhance the food system by promoting sustainability and equity through several key objectives. These include increasing the production and consumption of seasonal, local, and organic foods, supporting fair supply chains, protecting urban agricultural spaces, advocating for healthy eating for all, and strengthening food system resilience. Additionally, it seeks to tackle food insecurity by ensuring the right to healthy and sustainable food for everyone, preventing food waste, and addressing climate change and biodiversity loss. To facilitate these goals, the strategy established two governance structures: the Food Policy Council and a joint office on sustainable food between the Barcelona City Council and the Catalan government, promoting collaborative, multi-level food policies and interventions (Ajuntament de Barcelona, 2022).

Additionally, the city’s engagement in global initiatives like the Milan Urban Food Policy Pact and the C40 Good Food Cities Declaration reflects its commitment to collaborative efforts addressing food system challenges. Barcelona also has a vibrant foodscape of community-led initiatives endorsing an agroecological food system vision and sustainability goals, and working on furthering the right to food. This diversity of social dynamics, policy processes, and initiatives positions Barcelona as a particularly relevant setting for exploring responses to food insecurity, enabling a comprehensive analysis of initiatives that address food availability and access, sustainability, agency, and resilience.

2.2. Food Security Analytical Framework

The article adopts the definition of food security proposed by the HLPE (2020), recognising that food security is a complex issue beyond mere food supply shortages (Committee on World Food Security, 2012). This definition outlines six interconnected dimensions, providing a comprehensive framework that addresses the multifaceted nature of food insecurity, emphasising a range of challenges that prevent individuals and communities from accessing, utilising, and enjoying sufficient, safe, and nutritious food necessary for an active and healthy life: Availability; Access; Stability; Utilisation; and, more recently, the dimensions Agency and Sustainability highlight the importance of empowering individuals to make informed decisions about their food, while ensuring that food systems are resilient and can endure over time (Table 1).

Table 1. The six dimensions of food security (defined by HLPE, 2020) and proposed criteria for evaluating FSIs.

Dimension	Definition (HLPE, 2020, p.28)	Criteria for assessment	Description
Availability	Having a quantity and quality of food sufficient to meet the dietary needs of individuals, free from adverse substances and acceptable within a given culture, supplied through domestic production or imports.	Diversity of food items	The variety of food available includes fresh, non-perishable, and prepared items. An example is a food program offering fruits, vegetables, grains, meat and canned food.
		Frequency and reliability of food distribution	How regularly and consistently food is distributed for example, weekly food donations vs occasional donations.
		Coverage and reach of the initiative	The number of people or areas the initiative serves. Example: A program serving an entire city or just a neighbourhood.
		Source of food supply	Whether food comes from local or non-local sources. Example: Food donations from nearby farms.
Access	Having the personal or household financial means to acquire food for an adequate diet at a level that ensures other basic needs are not threatened or compromised, and that adequate food is accessible to everyone, including vulnerable individuals and groups.	Affordability of food	Whether food is free or low-cost for recipients. Example: Free meals provided by a community kitchen.
		Geographic accessibility	How easily can people reach the food distribution centres? An example is a food bank within walking distance of homes or different city areas.
		Equity of access	Whether all vulnerable groups have equal access to food, an example is initiatives prioritising support to the senior and child populations during a crisis.
Stability	Having the ability to ensure food security in the event of sudden shocks (e.g., an economic, health, conflict or climatic crisis) or cyclical events (e.g., seasonal food insecurity).	Continuity of food supply	The stability of the food supply over time. Example: A food pantry that operates year-round.
		Resilience to shocks and capacity for emergency response	The initiative's ability to continue providing service during crises or emergencies. An example is a food bank that increases services during a natural disaster.
		Seasonal stability	The ability to provide food consistently despite seasonal changes. Example: Fresh produce is available even in winter or summer breaks.
		Funding stability	How reliable and long-term the funding for the initiative is. Example: A program supported by government grants for multiple years.

Table 1. (Cont.) The six dimensions of food security (defined by HLPE, 2020) and proposed criteria for evaluating FSIs.

Dimension	Definition (HLPE, 2020, p.28)	Criteria for assessment	Description
Utilisation	Having an adequate diet, clean water, sanitation, and healthcare to achieve a state of nutritional well-being where all physiological needs are met.	Nutritional adequacy of food provided	Whether the food meets nutritional standards. Example: Offering balanced meals with proteins, fruits, and vegetables.
		Food safety standards	Adhering to safety regulations in food handling and distribution. Example: Storing perishable items at safe temperatures.
		Health and nutrition education	Providing education on healthy eating habits. Example: Cooking classes on preparing nutritious meals.
		Healthcare linkages	Connecting people to healthcare services through the initiative. Example: Referrals to local health clinics during food distributions.
Agency	Having the capacity to act independently to make choices about what we eat, the foods we produce, how that food is produced, processed, and distributed, and to engage in policy processes that shape food systems.	Participation in decision-making	The extent to which beneficiaries or participants are involved in making decisions about the initiative. Example: Community members decide what types of food are provided.
		Cultural appropriateness of food provided flexibility and choice in food access	Ensuring the food aligns with the recipients' cultural practices, or the ability for recipients to choose the types of food they receive. Example: Offering halal meals in Muslim communities or letting people select items from various foods at a pantry.
		Access to information and education	Providing access to information on sustainable, equitable, and democratic food systems. Example: Workshops and training programmes on agroecology and food sovereignty, empowering communities to make informed food choices and advocate for fairer food policies.
		Opportunities for engagement in food production and distribution	The involvement of recipients in growing or distributing food. Example: A community garden where participants grow their vegetables.
		Flexibility and choice in food access	The ability for recipients to choose the types of food they receive. Example: Letting people select items from various foods at a pantry.

Table 1. (Cont.) The six dimensions of food security (defined by HLPE, 2020) and proposed criteria for evaluating FSIs.

Dimension	Definition (HLPE, 2020, p.28)	Criteria for assessment	Description
Sustainability	Adopting food system practices that contribute to the long-term regeneration of natural, social, and economic systems, ensuring the food needs of the present generation are met without compromising the needs of future generations.	Environmental impact of food types and sourcing	The ecological effects of where and how food is sourced, as well as the types of foods and their impacts (e.g., animal protein). Example: Choosing plant-based proteins instead of industrially produced animal protein can significantly reduce greenhouse gas emissions, land use, and water consumption.
		Support for local food systems	Whether the initiative supports local farmers and producers. Example: Purchasing food directly from nearby farms.
		Reduction of food waste	Efforts to minimise the waste of surplus food. Example: Distributing excess food from restaurants.
		Economic viability and long-term funding	The financial sustainability of the initiative over time. Example: A program funded through consistent community donations.
		Strengthening of social cohesion and community networks	Creating spaces for social interaction and promoting supportive networks that facilitate access to resources, information, and opportunities. Example: Organising weekly cooking classes alongside meal service to encourage community members to participate.

Source: Authors' elaboration based on Clapp et al. (2022), Llobet-Estany (2014), Loopstra (2018), Monsivais et al. (2021), Oldroyd et al. (2022), and Walters et al. (2021).

2.3. Data Collection and Analysis

In the first step of data collection and analysis, we mapped the initiatives addressing food insecurity in Barcelona. Initiatives constitute a type of intervention defined as an organised effort to mitigate household food insecurity (Loopstra, 2018). This mapping drew on online research, previous exercises (Davies et al., 2025), Barcelona City Council listings, and consultations with local experts. In the second step, each initiative was characterised and classified using secondary information across seven key variables: the nature of the entity (public, private, third sector, or mixed); funding sources (public, private, donation-based, or self-funded); food resource origin (food donations, public procurement, food waste recovery, self-production, or market-based access); staffing (paid or volunteer); type of aid provided (e.g., food, cash, referrals, or educational); and response type (emergency or long-term).

Information to complete this task was gathered through a collaborative process, including reviewing organisational websites, reports, and direct communications, and conducting additional interviews with key personnel from the city council's social services department.

The third step involved analysing each type of initiative through the lens of the six dimensions of food security (HLPE, 2020), culminating in the identification of the strengths and limitations associated with each FSI typology. Criteria for evaluating the initiatives were identified through a literature review and consultation with the research team, which consisted of local food systems experts, ensuring these were appropriate to a Global North urban context. Each dimension was analysed using specific criteria (Table 1).

3. Results

3.1. *Types and Diversity of Initiatives*

Barcelona has at least 309 initiatives addressing food insecurity (Figure 1 and Table 2). The majority (166) belong to the third sector, followed by public sector initiatives (65), and community initiatives (52), which include grassroots organisations such as neighbourhood food networks and community gardens that are not legally classified as third- or private-sector entities. Additionally, there are 21 mixed public–third sector partnerships and five multi-sector partnerships focused on food justice, democracy, and sustainability, such as the Network for the Right to Adequate Food and Agròpolis.

While most initiatives originate in the third sector, public–third sector partnerships play a critical role in Barcelona's food security response. Many municipal soup kitchens and food pantries are operated by charities and other third-sector organisations, often collaborating with public institutions. Some initiatives' hybrid nature and multifunctionality necessitated creating mixed categories to classify specific initiatives accurately.

For instance, public–private partnerships like Foodback—a project that manages surplus food from Mercabarna wholesale market companies by redistributing it for reuse, prioritising donations to social organisations or repurposing it—bring together the public sector (e.g., Barcelona City Council and Mercabarna), the private sector (e.g., Mercabarna food companies), and third-sector organisations (e.g., the Food Bank Foundation and the Red Cross). Public–third sector initiatives include municipal and community soup kitchens, such as Espais Alimenta, which are funded and overseen by the city's social services and operated by third-sector organisations. Additionally, public–community initiatives such as Agròpolis, led by the Barcelona City Council, serve as collaborative spaces for dialogue, action, and policy development among civil society, the economic sector, academia, and local government. These actors share a common goal: to transform Barcelona's food system based on the values of food sovereignty and agroecology. Food sovereignty involves not only addressing food security principles such as access and availability, but also advancing the right of people to define their own food and agriculture systems, prioritising local, culturally appropriate, and ecologically sound production (Patel, 2009).

The initiatives in Barcelona that support individuals experiencing food insecurity and poverty primarily provide financial assistance (2%) and food aid (96%), including groceries, fresh food, and prepared meals (Figure 2). However, these types of assistance are not mutually exclusive. For example, many initiatives distribute food

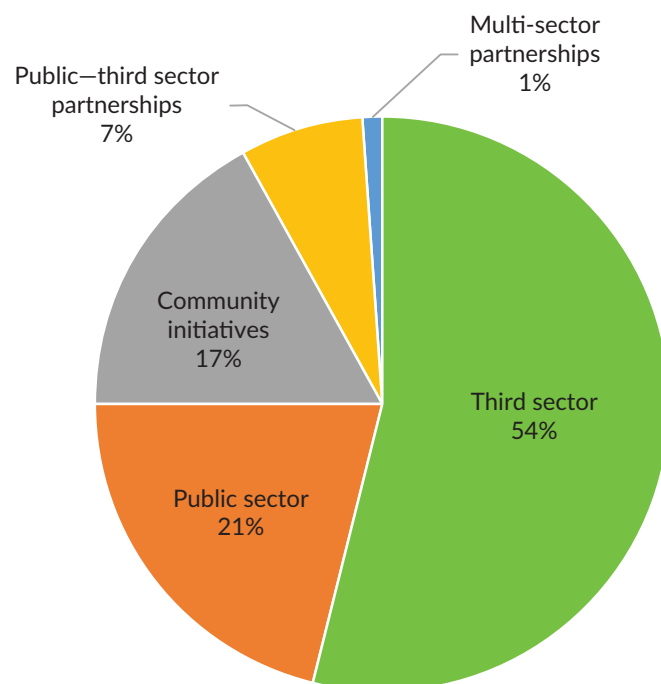


Figure 1. Distribution of initiatives by sector.

parcels while serving prepared meals in soup kitchens. Additionally, many initiatives focus on advocacy and education to promote a fairer and more sustainable food system in the city, even though they do not directly provide money or food.

Regarding funding type (Figure 2), half of the initiatives receive a mix of donations, grants, and public funds, while one-third rely exclusively on public sources. In total, twenty-eight percent of the initiatives rely on public funds, with government-funded programs (e.g., the Spanish Agricultural Guarantee Fund) supporting social dining programs in the city and meals offered by the municipal government. Public support could also be in-kind, offering operating spaces, rental payments, and subsidising public services such as water, electricity, and other utilities for some initiatives. As for the food supply sources for initiatives (Figure 3), the Food Bank Foundation, a long-established second-level non-profit organisation dedicated to recovering food through various programs, redistributes food to nearly 70% of first-level initiatives such as food pantries, food banks, and soup kitchens. Similarly, organisations are increasingly involved in reducing food waste from wholesale centres, supermarkets, and restaurants within neighbourhoods, supplying food to approximately 35% of the initiatives. Municipal and community gardens rely 100% on self-produced food. However, it is important to note that these sources are not exclusive, and initiatives usually leverage various resources to remain operational. Therefore, the nature of the initiatives found in Barcelona is hybrid. At the same time, most are constituted as third-sector initiatives; they rely on a myriad of funding and provisioning sources and collaborate through different partnerships to ensure their sustainability (e.g., Espais Alimenta).

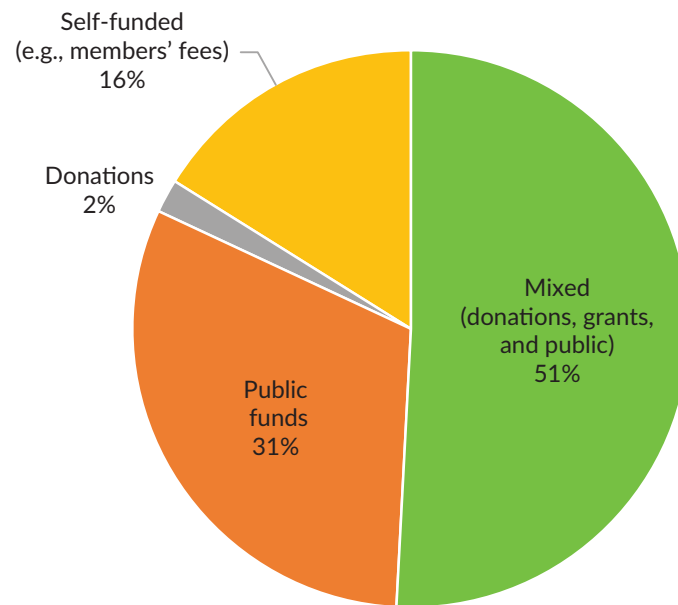


Figure 2. Distribution of initiatives by funding type.

Table 2. Distribution of initiatives by type of aid provided.

Category	Total count of initiatives	Type of aid	
		Subcategory	Subcategory count of initiatives
Financial	6	Transfer	1
		Cards	5
Food	296	Groceries and fresh	190
		Cooked food	86
		Cooked food, groceries and fresh	20
Other	7	Advocacy and policy	7

Nine categories of FSIs emerged from our categorisation: (a) food banks, (b) food pantries, (c) soup kitchens, (d) government food distribution programs, (e) cash transfer programs, (f) prepaid credit card programs, (g) urban gardens, (h) food recovery and redistribution programs, and (i) food justice, democracy, and sustainability initiatives (Table 3). It is worth noting that many of the 309 initiatives operate under multiple FSI models. For instance, an initiative can provide food baskets (food pantries) and cooked meals in soup kitchens (e.g., Fundación Jovent).

Food bank initiatives are the most common model of food-aid distribution, followed by soup kitchens, food pantries, food recovery and redistribution programs, prepaid credit card programs, government food distribution programs, and cash transfer programs. Other categories of initiatives working for food security in the city but that do not directly involve food assistance for the food-insecure group are urban gardens (municipal and community-managed) and food justice, democracy, and sustainability initiatives (Table 3). Although these last two are essential initiatives addressing food security in Barcelona, these efforts do not directly involve food assistance for food-insecure groups. Specifically, in the case of Barcelona, urban gardens have yet to play a significant role in the city's food sovereignty (Langemeyer et al., 2018).

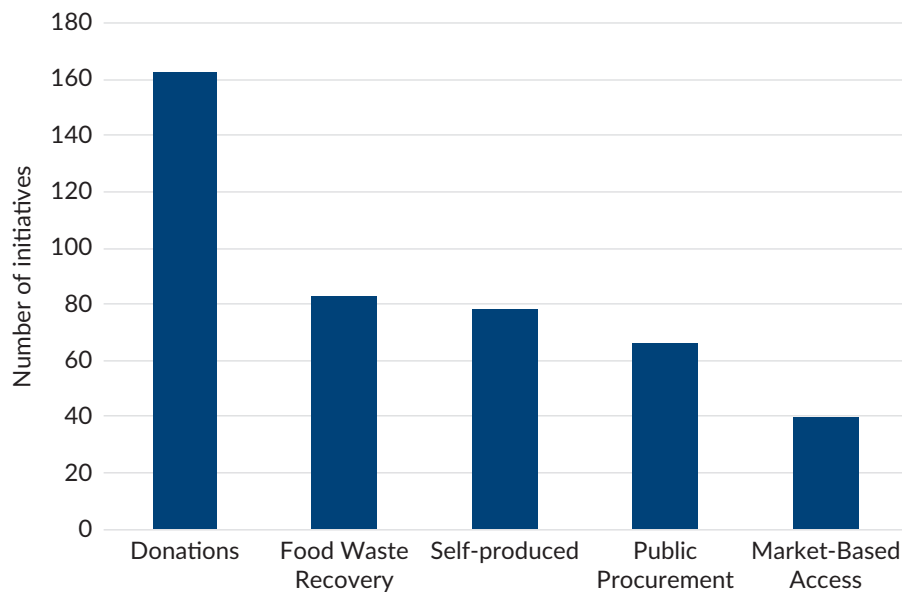


Figure 3. Primary food sourcing strategies used by initiatives (number of initiatives by type).

Table 3. Definition of FSIs found in Barcelona. The number of initiatives identified is provided in parentheses.

Type of Initiative	Definition	Nature and Implementation	References
Food Banks (103)	Non-profit, first-level initiatives that distribute food packages directly to individuals in need, typically in the form of food baskets or parcels.	Operate as large-scale intermediaries sourcing food from donations, surplus recovery, and public programs to supply other FSIs.	Loopstra (2018), Moragues-Faus et al. (2022)
Food Pantries (40)	Initiatives that collect and distribute surplus food locally, promoting mutual aid and empowering participants through low-cost or symbolic pricing.	Community-driven, often linked to food banks and local food recovery networks, offering flexible and localised support.	Loopstra (2018), Moragues-Faus et al. (2022)
Soup Kitchens (78)	Programs that provide free or low-cost meals to individuals facing severe economic hardship. Often involve community participation and offer additional services like cooking and nutrition education.	Typically run by NGOs, religious groups, or municipalities, serving prepared meals daily while fostering social support.	Llobet-Estany (2014), Moragues-Faus et al. (2022)
Government Food Distribution Programs (3)	Publicly funded initiatives providing meals through schools, senior centres, and shelters (e.g., municipal soup kitchens, meals-on-wheels).	State-run or subsidised programs targeting specific vulnerable groups with structured food provision.	Llobet-Estany (2014), Moragues-Faus et al. (2022)

Table 3. (Cont.) Definition of FSIs found in Barcelona. The number of initiatives identified is provided in parentheses.

Type of Initiative	Definition	Nature and Implementation	References
Cash Transfer Programs (1)	Government-led financial support systems provide funds for food purchases.	Direct monetary assistance allows recipients flexibility in their food choices.	Moragues-Faus et al. (2022)
Prepaid Cards (5)	Cards provided by authorities or charities to purchase food at selected retailers, promoting autonomy in food acquisition.	A controlled financial aid mechanism offering dignity and flexibility to beneficiaries.	Llobet-Estany (2014), Moragues-Faus et al. (2022)
Urban Gardens (78)	Shared plots managed by the city or citizens to grow fresh produce, supporting food self-sufficiency and sustainability.	Community-led or municipal projects promoting local food production, education, and environmental engagement.	Llobet-Estany (2014), Moragues-Faus et al. (2022)
Food Recovery and Redistribution Programs (13)	Initiatives that recover surplus food from supply chains and redistribute it to those in need or food security organisations.	Partner with supermarkets, markets, and restaurants to reduce waste and improve food access.	Llobet-Estany (2014), Moragues-Faus et al. (2022)
Food Justice, Democracy, and Sustainability Initiatives (7)	Community and agroecological projects promoting food sovereignty, equitable access to local products, and social justice.	Focus on advocacy, systemic change, and alternative food networks rather than direct food aid.	Moragues-Faus et al. (2022)

3.2. Analysis of FSIs Through the HLPE's Framework

Drawing on the HLPE framework (see Table S1 in the Supplementary File), eight FSIs form a spectrum ranging from short-term relief to systemic transformation. At one end, food banks and soup kitchens efficiently mitigate acute scarcity by boosting availability and lowering economic barriers. However, their impact on dietary quality and user autonomy remains limited: They rely on variable donations and do not tackle underlying causes, resulting in unstable operations and minimal beneficiary agency.

Mid-spectrum, solidarity pantries and food recovery programs blend redistribution with community engagement. By offering cooking classes and choice-based distribution, they enhance nutritional utilisation and spur modest gains in agency. However, both models inherit instability from fluctuating surplus streams and volunteer capacity, which constrains long-term sustainability.

Government distribution schemes deliver the highest stability, underpinned by public procurement and nutrition standards, and integrate environmental objectives through local, seasonal sourcing. Their structured reach, though crucial for the most vulnerable, can restrict agency when food baskets lack flexibility.

Shifting toward empowerment, prepaid food cards and urban gardens prioritise dignity and choice. Cards dismantle stigma and bolster agency by letting recipients select foods aligned with their needs, although funding dependencies and retail concentration pose sustainability challenges. Urban gardens foster

agroecological practices and participant control over production, yet their small scale and limited land access hinder their broader impact.

Finally, food justice, democracy, and sustainability initiatives pursue a transformative agenda: democratising system governance, fostering equitable access to local, organic produce, and integrating agroecology. While their collaborative models hold promise for durable, systemic change, they demand sustained policy support and cross-sector coordination to scale.

In sum, while redistribution remains vital for immediate relief, the most significant long-term resilience emerges when programs simultaneously bolster autonomy, community agency, and ecological sustainability.

4. Discussion

4.1. Narrow and Specialised vs. Comprehensive and Territorialised Approaches

The assessment of FSIs in Barcelona through the lens of the HLPE's six dimensions reveals the coexistence of two dominant approaches: narrow-focused and comprehensive initiatives. Initiatives that adopt a narrow or specialised approach primarily focus on the immediate provision of food to vulnerable populations, prioritising access and distribution. While these efforts are essential, they often overlook the underlying causes of food insecurity, such as poverty (Pollard & Booth, 2019), social inequities (Penne & Goedemé, 2021), and environmental degradation (Gomiero, 2016; Subramaniam & Masron, 2021). Furthermore, these models (such as food banks or municipal soup kitchens) tend to maintain the status quo and reinforce social isolation (Warshawsky, 2010). Notwithstanding, these initiatives have also been identified as spaces of care with the potential to incubate political and ethical values, practices, and subjectivities that challenge the status quo (Clope et al., 2017). Well-established charitable institutions and government assistance programmes primarily run them. This limited scope typically results in short-term solutions that ensure adequate food intake but fail to address critical issues like nutritional quality, sustainability, agency, and long-term resilience.

In contrast, comprehensive initiatives adopt a holistic and transformative approach by integrating elements of agency, such as empowerment and community participation, with traditional aspects of food security: availability, access, utilisation, and stability. Initiatives like the El Gregal community soup kitchen in Barcelona go beyond merely providing food; they aim to strengthen social networks and empower individuals by involving beneficiaries in decision-making. Many of these programs promote personal development, local and agroecological food production, and supportive community networks through cooking classes and job training. Ultimately, they seek to create a lasting impact by addressing the root causes of food insecurity and recognising the deep interconnections between food systems, social justice, ecological sustainability, community resilience, and public health.

Another element defining comprehensive initiatives is their territorial component. "Territorial" refers to the specific geographic or community-based context in which initiatives operate (i.e., neighbourhood or district level), emphasising a focus on local identities, resources, needs, and dynamics. This concept highlights the importance of understanding the unique socioeconomic, cultural, and environmental factors that define a particular area, ensuring that solutions are tailored and effectively rooted in the local reality. Place-based or

territorial approaches to food security recognise the diversity of places and their distinct needs and capacities to address challenges (Cistulli et al., 2014; Sonnino et al., 2016). As noted by Moragues-Faus et al. (2020) and Turner and Hammelman (2024), such a territorial approach is crucial for addressing food insecurity in urban environments by enhancing the relevance and sustainability of interventions. The initiatives include community soup kitchens run by neighbours and solidarity food pantries organised by neighbourhood networks that distribute food to those in need (e.g., Rebosts Solidaris—solidarity food pantries—and Xarxa d’Aliments de Gràcia). In contrast, specialised or “narrow” initiatives often operate with models disconnected from their neighbourhoods’ local processes and realities; these initiatives may include traditional food banks, frequently run by external volunteers, excluding an important element of building and strengthening local support networks.

A significant factor contributing to the abandonment of food assistance programs is the challenge of accessing them, particularly when these initiatives are not located within the community or have inadequate transportation infrastructure (Loopstra, 2018). Adopting a territorial approach can effectively address this physical access issue while enhancing other critical aspects, such as agency and participation, by strengthening social support networks (HLPE, 2024). Thus, a territorial approach is essential; without it, if only a small segment of the food-insecure population is willing or able to engage consistently with these programs, significant reductions in food insecurity will remain out of reach (Loopstra, 2018).

While specialised initiatives like food banks remain predominant in Barcelona, our analysis revealed a notable shift from these traditional food aid models towards a more comprehensive approach (i.e., the HLPE’s six dimensions) and showcased a deeper understanding of the complexities of urban food insecurity dynamics. It is important to state that the aspiration to develop comprehensive and articulated urban food security strategies does not necessitate all initiatives adopting a broad approach. Instead, it creates a valuable opportunity to cultivate synergistic interactions among diverse programs and critically evaluate the current methodologies. Recognising that both comprehensive strategies and focused initiatives can coexist is essential for enhancing the overall effectiveness of urban food systems. Creating distributed place-based networks (Moragues-Faus et al., 2020) might endow the landscape of initiatives with distinct capabilities and enhance their resilience, responsiveness, and adaptability to changes (Blay-Palmer et al., 2016).

In this sense, coordination across different levels of governance and sectors is crucial for ensuring sustainable food security (HLPE, 2024). The initiatives identified in Barcelona demonstrate a high level of engagement from local actors, who are often overlooked yet play a fundamental role in addressing the needs of vulnerable populations. The initiatives’ community-based and territorialised nature is a testament to the power of collaboration, particularly public–private–community partnerships, which complement local governments’ efforts. These partnerships, as exemplified by the City Council’s social services programme Alimenta in Barcelona, are crucial in helping to create a more comprehensive and resilient food security network from the grassroots level, supported by higher administrative tiers of the city.

A comprehensive overview of the challenges faced by various FSIs in urban settings such as Barcelona, as shown in Table S2 in the Supplementary File, underscores the strengths and limitations of each approach. This table synthesises the main features of seven types of FSIs—including food banks, solidarity pantries, community kitchens, and urban gardens—highlighting how each contributes differently to food availability, access, utilisation, and system sustainability. For example, while food banks can serve large populations in

crisis, they often struggle with inconsistent supply and limited user agency. In contrast, solidarity pantries and community kitchens promote dignity and social cohesion, yet face scale and policy integration issues.

It is clear from this comparative analysis that there is no singular solution to the complex issue of food insecurity. Instead, an effective strategy must involve a well-articulated combination of diverse initiatives and the synergies among them in order to build a more resilient and inclusive urban food system. However, transitioning toward sustainable food systems requires navigating key tensions and trade-offs, particularly when moving from narrow FSIs to more comprehensive, territorialised, and system-oriented approaches.

4.2. From Narrow to Comprehensive and Territorialised Approaches: Strengths, Limitations, and Tensions

Our analysis reveals complexities in transitioning towards comprehensive and territorialised approaches to addressing food insecurity. As shown in Table S2 in the Supplementary File, initiatives such as government food programs offer long-term stability but may exclude vulnerable groups due to bureaucratic barriers. Meanwhile, urban gardens and food justice projects reflect a more integrated and sustainable model, yet they face challenges in terms of scale and political support. These contrasts reveal the underlying tensions between short-term food insecurity relief and structural transformation. The first tension emerging from a comprehensive perspective concerns the balance between agency and initiatives' economic and social sustainability. Efforts to provide more than just food by engaging and empowering participants are often community-based organisations, driven by volunteers and limited staff, responsible for a wide range of activities. However, delivering personalised, dignified, and empowering assistance requires time, expertise, and a professional team capable of promoting agency, facilitating workshops, offering education and support, and fostering social networks. Limited human resources and often a lack of integration into municipal public policies undermine the long-term viability of these initiatives. As a result, their visibility and ability to influence policy processes are significantly hindered. Tension one thus raises the question: Can more empowering and dignified spaces for food-insecure populations be created when community initiatives face severe limitations in capacity and resources?

The second tension centres on the trade-offs between enhancing individual agency and promoting sustainability versus managing the economic cost and reach of food aid initiatives. In Barcelona, prepaid cards for food assistance, redeemable at selected supermarket chains, have been praised for increasing beneficiary autonomy and reducing stigma. However, this model raises concerns among local experts and policy-makers, as it may undermine integrated urban food policies developed over the past 15 years. Specifically, it risks reinforcing unsustainable economic structures dominated by large retailers, limits support for local food systems, and has little impact on improving dietary quality. Moreover, compared to collective food purchasing, the higher per-person cost of prepaid cards reduces the number of beneficiaries reached, creating a direct tension between empowerment, sustainability, and equitable access. Tension two thus asks: Can food insecurity interventions enhance individual agency while contributing to sustainable food choices and supporting local food systems?

The third tension arises between the urgent need for rapid access to food, environmental sustainability (e.g., providing locally or organically produced foods wherever possible), and utilisation goals (e.g., providing nutritious and safe foods that are compatible with the household's cooking facilities and appliances, and

tailored to the individual's culinary skills and food preparation knowledge). In Barcelona, the combined food aid and monetary support provided by municipal social services, the leading food bank network, and key charities (such as Caritas and the Red Cross) assist only 46% of the population at risk of poverty (XDAA, 2021). With limited public and community resources, food assistance is critically needed. However, as most initiatives rely on food donations and surpluses, their control over the types (e.g., meat, fresh produce, high-calorie and highly-processed foods) and characteristics (e.g., organic, local) of food distributed is limited, affecting the food's sustainability, healthiness, and nutrition. A further example of this tension is evident in practices such as gleaning and surplus food recovery, which provide immediate access to food but may include conventional, high-input agricultural products or processed foods from distant locations. These practices may also inadvertently perpetuate stigmas surrounding the consumption of "rescued" foods. In this context, sustainability objectives, such as reducing food miles or promoting responsible meat consumption, and utilisation goals often take a back seat to the immediate need for food provision. Tension three posits the question: Can emergency food aid on a large scale incorporate sustainable and utilisation goals more effectively?

These tensions reveal that transitioning to sustainable urban food systems requires re-evaluating sourcing strategies, which may involve higher costs or longer lead times. These shifts risk undermining immediate food access for vulnerable populations and may challenge the economic viability of food system actors. While a detailed analysis of this tension lies beyond the scope of this article, it nonetheless underscores an urgent need to reconsider how resources are allocated. Moving from fragmented, narrow initiatives toward more comprehensive approaches that align social and economic viability is essential. Lessons from past efforts to strengthen food quality criteria in sustainable public procurement offer a valuable foundation for driving systemic change.

4.3. Lessons Learned for the EU Context: Towards Integrated and Sustainable Urban Food Policies

Six important lessons come from Barcelona's FSIs, offering valuable insights for EU cities aiming to develop more resilient urban food systems and transition towards integrated and sustainable urban food policies.

First, effectively balancing specialised and comprehensive approaches requires recognising their complementary roles. While narrow initiatives, such as food banks or prepaid card schemes, serve as crucial emergency responses, they must be embedded within a broader strategy that fosters agency, empowerment, and sustainability (Moragues-Faus & Morgan, 2015; Pothukuchi & Kaufman, 1999). The shift towards comprehensive approaches in Barcelona, exemplified by initiatives like Rebosts Solidaris and the El Gregal community dining project, highlights the benefits of place-based solutions that strengthen community networks and enhance local food resilience. For EU cities, this underscores the need for policy frameworks that not only support emergency food aid but also create pathways for transformative food assistance models integrating education, employment, and local food production.

Second, the territorialisation of food assistance has proven critical in improving accessibility and participation, as physical access remains a major barrier to food security in urban areas (Loopstra, 2018). Barcelona's experience shows that embedding food assistance within neighbourhood-based networks enhances reach and participation, reducing stigma while fostering stronger social support systems. EU cities can build on this model by prioritising localised approaches in their urban food policies, ensuring that food

aid and community-based mechanisms are embedded within broader territorial planning strategies (Moragues-Faus et al., 2017).

Third, addressing the tensions between access, agency, and sustainability in European cities requires a multifaceted approach that establishes synergistic collaborations between community initiatives and public institutions while ensuring financial and organisational sustainability. To resolve the tension between sustainability and agency, cities can strengthen community-led models by providing hybrid funding (combining public funds with social enterprises and local philanthropy) while linking these initiatives into municipal frameworks to enhance stability without undermining grassroots engagement. This requires developing policy and regulatory instruments that facilitate these public–community partnerships. Professionalisation and capacity-building through training for social workers, nutritionists, and urban planners are also key to improving operational efficiency while ensuring dignified and empowering assistance.

Fourth, reconciling urgent food access with sustainability goals requires justice-oriented approaches beyond surplus recovery. Food assistance programmes must transition from reliance on food surplus recovery to justice-oriented models prioritising sustainability. Using examples such as the Milan Urban Food Policy Pact, EU cities can implement frameworks that tackle food insecurity and promote sustainable food systems (Milan Urban Food Policy Pact, 2015). In this regard, EU cities can explore alternative procurement models and establish public–community partnerships that reduce dependency on food donations. Prominent examples include partnerships with agroecological producers or sustainable public food procurement schemes, enabling greater control over food quality while ensuring that food aid does not compromise sustainability goals (Barling et al., 2002).

Fifth, improving the design of food insecurity instruments, such as prepaid cards, can enhance sustainability, utilisation, and agency. For instance, prepaid food assistance cards could be redesigned to encourage sustainable consumption by offering fresh, local, and organic food incentives or creating municipal food vouchers redeemable within short supply chains (Dimitri et al., 2015; Freedman et al., 2014; Karpyn et al., 2022). Alternative food currencies could further support local producers and small retailers (Becot et al., 2018). However, some innovative solutions, such as increasing supermarkets in food-insecure areas to increase fruit and vegetable consumption, have proven low efficacy (Cohen, 2018). Therefore, changes must be co-produced with food-insecure groups to avoid increased stigmatisation and ensure feasibility. These measures must align with broader urban food policies prioritising resilience, such as urban agriculture, school meal reforms, and social dining spaces. This ensures that food aid is embedded in a long-term vision rather than treated as a short-term fix.

Finally, strengthening multi-level governance and participatory mechanisms is essential to integrate food aid into broader food system transitions. Barcelona's experience underscores the importance of governance structures that facilitate coordination across different levels and sectors, from food policy councils to creating different forms of partnership. For EU cities, this calls for the broadening and deepening of multistakeholder governance mechanisms that connect municipal authorities, community organisations, and private actors in the co-development and management of urban food policies (Brunori et al., 2019). On the one hand, participatory governance is essential, ensuring that vulnerable communities are directly involved in co-designing food policies to balance agency with sustainability while avoiding exclusionary or inefficient interventions. This is particularly relevant in the context of increasing critiques over multistakeholderism

(McKeon, 2018; Slater et al., 2024) and the importance of considering the needs of most-affected actors, such as food-insecure groups, as primordial in front of other interests (Duncan & Claeys, 2018). For that purpose, it is necessary to embed more critical perspectives on participation based on justice definitions that ensure the inclusion of vulnerable groups in decision-making processes (Moragues-Faus, 2020). On the other hand, activating other governance mechanisms beyond multi-factor deliberation spaces, such as food policy councils, is paramount to supporting territorialised and multidimensional undertakings of food insecurity challenges. As seen in initiatives like *Alimenta* in Barcelona, public–community partnerships demonstrate how municipal administrations can leverage grassroots initiatives to build a more integrated and resilient food safety net (Sonnino & Spayde, 2014). Consequently, further exploration of what regulatory frameworks and policy instruments can be mobilised to ensure synergistic collaboration across urban communities and the city council is necessary to realise the right to food.

In summary, the transition towards sustainable and inclusive urban food systems in the EU hinges on six key lessons: (a) balancing narrow and comprehensive approaches; (b) prioritising territorialisation; (c) fostering synergies between grassroots and institutional actors; (d) aligning emergency food access with sustainability; (e) improving the design of food insecurity interventions; and (f) investing in diverse and rights-based participatory, multi-level governance structures. These insights highlight the need for holistic planning that works through existing tensions and aligns emergency responses with long-term strategies to build more resilient, equitable, and environmentally sustainable food systems.

5. Conclusions

This study has contributed to further our understanding of urban food insecurity in the European context, as where it often remains invisible in statistics, well as in, public and political discourses, and academic debates. First, our research shows that many initiatives, individuals, and resources are engaged in alleviating food insecurity. These initiatives highlight the ongoing challenges and gaps in effectively tackling food insecurity in urban areas, underscoring a pressing need to integrate poverty and food insecurity into European urban policy agendas.

Second, we have contributed to developing analytical tools that effectively capture the complex nature of food insecurity and provide practical application pointers. Based on the six dimensions of food security and the identification of specific criteria for evaluation, the proposed analytical framework applied to the Barcelona case study effectively bridges new concepts with current practices. It emphasises the framework's practical implications, extending beyond theoretical discussions. Our findings demonstrate that these dimensions should not be understood as abstract constructs but as fundamental components shaping the daily operations of food insecurity initiatives and the lived experiences of those affected.

Third, the analysis has provided a typology of food insecurity initiatives relevant to Global North contexts, expanding existing research (Llobet-Estany, 2014; Loopstra, 2018; Moragues-Faus et al., 2022). The analysis of this typology and its diversity has revealed two key elements that define comprehensive initiatives: their capacity to integrate all six dimensions of food security and their territorial component. Initiatives that tackle the multidimensional nature of food security and work within specific geographic or community contexts ensure that solutions are relevant and grounded locally. This notion is central to shaping effective responses to food insecurity, indicating that strategies should align with the unique needs of the territories (e.g., neighbourhoods or districts).

The research results also surface key tensions in the so-called integrated urban food policy world that must be acknowledged and addressed to build a sustainable food system that delivers food security and nutrition for all. Our analysis of food aid provision in Barcelona, particularly among initiatives employing a place-based and multidimensional approach, reveals tensions at the intersections of (a) agency (expressed through initiatives' goals of empowerment and dignified support) *and* initiatives' organizational sustainability; (b) individual agency (the ability of recipients to make autonomous, market-based food choices) *and* sustainability of monetized support models; and (c) rapid access to food *and* environmental sustainability and utilisation goals. These tensions are fundamental to food system governance, yet remain inadequately addressed in policy and practice. Future research should examine how integrated governance mechanisms can move beyond pursuing win-win solutions to confront trade-offs and conflicts. Key questions include: (a) How can community-led food initiatives balance economic sustainability with their mission to foster agency and empowerment? (b) What governance models best support the collaboration between grassroots food initiatives and municipal policies while preserving their autonomy and community-driven nature? (c) What role can urban agriculture and short food supply chains play in reducing reliance on food banks and donations while ensuring accessibility for vulnerable populations? A deeper examination of these interconnections could help develop more comprehensive and actionable policy solutions and help overcome integration challenges reported in European urban food policies.

Finally, the distinct strengths and limitations identified indicate that not all FSIs need to shift their focus towards comprehensive solutions. However, it is essential that they critically reflect on the different dimensions of food security and actively seek collaborations to ensure all six dimensions are addressed collectively, and tensions navigated. The development of networks and collaborations across initiatives, the inclusion of different types of actors, as well as strategic policies and plans anchored to a multidimensional approach to food security are critical to building resilient and sustainable food systems that are inclusive, equitable, and capable of addressing current and future challenges.

Acknowledgments

The authors would like to thank Robert Martinez Varderí for his contributions to mapping food insecurity initiatives. We are also grateful to the anonymous peer reviewers for their constructive comments, which substantially improved the quality and clarity of the manuscript. Finally, we acknowledge the support of the English language editor for their assistance in proofreading the final version.

Funding

This research was funded by the European Union and the Spanish Ministry of Science, Innovation and Universities (MICIU) / State Research Agency (AEI), under the 2021 Knowledge Generation Projects program (grant FOOD4GOOD PID2021-125013NA-I00), and the European Union through NextGenerationEU—Spain's 2024 Recovery, Transformation and Resilience Plan (PRTR; grant CITIES4FOOD CNS2023-144381).

Conflict of Interests

The authors declare no conflict of interests.

Supplementary Material

Supplementary material for this article is available online in the format provided by the authors (unedited).

References

- Abdillah, A., Widianingsih, I., Buchari, R., Nurasa, H., & Ahmadi, Z. (2024). Food insecurity versus public health? Social resilience. *Journal of Public Health*. Advance online publication. <https://doi.org/10.1093/pubmed/fdae190>
- Ajuntament de Barcelona. (2022). *Estratègia d'Alimentació Saludable i Sostenible Barcelona 2030*. https://www.alimentaciosostenible.barcelona/sites/default/files/2023-06/EstrategiadAlimentacioSostenible_bcn.pdf
- Baker, L., & de Zeeuw, H. (2015). Urban food policies and programmes. In H. de Zeeuw & P. Drechsel (Eds.), *Cities and agriculture: Developing resilient urban food systems* (pp. 26–55). Routledge.
- Barling, D., Lang, T., & Caraher, M. (2002). Food, social policy and the environment: Towards a new model. *Social Policy & Administration*, 36(6), 556–568.
- Bartoll, X., Pérez, K., Pasarín, M., Rodríguez-Sanz, M., & Borrell, C. (2018). *Resultats de l'enquesta de salut de Barcelona 2016/17*. Agència de Salut Pública de Barcelona.
- Battersby, J. (2017). Food system transformation in the absence of food system planning: The case of supermarket and shopping mall retail expansion in Cape Town, South Africa. *Built Environment*, 43(3), 417–430. <https://doi.org/10.2148/benv.43.3.417>
- Battersby, J., Brown-Luthango, M., Fuseini, I., Gulabani, H., Haysom, G., Jackson, B., Khandelwal, V., MacGregor, H., Mitra, S., Nisbett, N., Perera, I., te Lintelo, D., Thorpe, J., & Toriro, P. (2023). Bringing together urban systems and food systems theory and research is overdue: Understanding the relationships between food and nutrition infrastructures along a continuum of contested and hybrid access. *Agriculture and Human Values*, 41, 438–448. <https://doi.org/10.1007/s10460-023-10507-6>
- Becot, F., Sitaker, M., Kolodinsky, J., Morgan, E., Wang, W., Garner, J., Ammerman, A., Pitts, S., & Seguin, R. (2018). Can a shift in the purchase of local foods by Supplemental Nutrition Assistance Program (SNAP) recipients impact the local economy? *Renewable Agriculture and Food Systems*, 35(1), 90–101. <https://doi.org/10.1017/S1742170518000327>
- Binimelis, R., & Roca, A. (2021). *Com s'alimenta Barcelona? Diagnosi del sistema alimentari de Barcelona*. Ajuntament de Barcelona. https://bcnroc.ajuntament.barcelona.cat/jspui/bitstream/11703/127635/1/SAS_Diagnosis_Com%20s%27alimenta%20Barcelona_.pdf
- Blanco-Romero, A., Blázquez-Salom, M., & Cánoves, G. (2018). Barcelona, housing rent bubble in a tourist city: Social responses and local policies. *Sustainability*, 10(6), Article 2043. <https://doi.org/10.3390/su10062043>
- Blay-Palmer, A., Sonnino, R., & Custot, J. (2016). A food politics of the possible? Growing sustainable food systems through networks of knowledge. *Agriculture and Human Values*, 33, 27–43.
- Brons, A., Oosterveer, P., & Wertheim-Heck, S. (2022). In- and exclusion in urban food governance: Exploring networks and power in the city of Almere. *Journal of Environmental Policy & Planning*, 24(6), 777–793.
- Brunori, G., Galli, F., Barjolle, D., van Broekhuizen, R., Colombo, L., Giampietro, M., & Kirwan, J. (2019). Are local food chains more sustainable than global food chains? *Agriculture and Human Values*, 36(2), 255–273.
- Calori, A., & Magarini, A. (2015). *Food and the cities: Food policies for sustainable cities*. Edizioni Ambiente.
- Candel, J. L. (2020). What is on the menu? A global assessment of MUFPP signatory cities' food strategies. *Agroecology and Sustainable Food Systems*, 44(7), 919–946. <https://doi.org/10.1080/21683565.2019.1648357>
- Canfield, M., Anderson, M. D., & McMichael, P. (2021). UN Food Systems Summit 2021: Dismantling democracy and resetting corporate control of food systems. *Frontiers in Sustainable Food Systems*, 5, Article 661552.
- Caraher, M., & Furey, S. (2018). Growth of food banks in the UK (and Europe): Leftover food for leftover

- people. In *The economics of emergency food aid provision* (pp. 25–48). Palgrave. https://doi.org/10.1007/978-3-319-78506-6_2
- Committee on World Food Security. (2012). *Coming to terms with terminology*. [www.fao.org/fsnforum/sites/default/files/file/Terminology/MD776\(CFS___Coming_to_terms_with_Terminology\).pdf](http://www.fao.org/fsnforum/sites/default/files/file/Terminology/MD776(CFS___Coming_to_terms_with_Terminology).pdf)
- Cistulli, V., Rodríguez-Pose, A., Escobar, G., Marta, S., & Schejtman, A. (2014). Addressing food security and nutrition using a territorial approach. *Food Security*, 6, 879–894.
- Clapp, J. (2021). The problem with growing corporate concentration and power in the global food system. *Nature Food*, 2, 404–408. <https://doi.org/10.1038/s43016-021-00297-7>
- Clapp, J., Moseley, W. G., Burlingame, B., & Termine, P. (2022). The case for a six-dimensional food security framework. *Food Policy*, 106, Article 102164.
- Cloke, P., May, J., & Williams, A. (2017). The geographies of food banks in the meantime. *Progress in Human Geography*, 41(6), 703–726.
- Cohen, N. (2018). *REFRESH: Modifying the Food Retail Expansion to Support Health program to improve healthy food access*. CUNY Urban Food Policy Institute.
- Comissions Obreres de Catalunya. (2023). *L'habitatge tenia un preu*. <https://www.ccoo.cat/wp-content/uploads/2023/06/informe-lhabitatge-tenia-un-preu.pdf>
- Crippa, M., Solazzo, E., Guizzardi, D., Monforti-Ferrario, F., Tubiello, F. N., & Leip, A. (2021). Food systems are responsible for a third of global anthropogenic GHG emissions. *Nature Food*, 2, 198–209. <https://doi.org/10.1038/s43016-021-00225-9>
- Davies, A. R., Cho, H., Vedoia, M., Varderi, R. M., & Gatejel, A. M. (2025). Evolving foodscapes: Tracing trajectories of urban and peri-urban food sharing initiatives for just food transitions. *Geoforum*, 163, Article 104318.
- Dimitri, C., Oberholtzer, L., Zive, M., & Sandolo, C. (2015). Enhancing food security of low-income consumers: Investigating financial incentives for use at farmers markets. *Food Policy*, 52, 64–70. <https://doi.org/10.1016/j.foodpol.2014.06.002>
- Doernberg, A., Horn, P., Zasada, I., & Piorr, A. (2019). Urban food policies in German city regions: An overview of key players and policy instruments. *Food Policy*, 89, Article 101782. <https://doi.org/10.1016/j.foodpol.2019.101782>
- Duncan, J., & Claeys, P. (2018). Politicising food security governance through participation: Opportunities and opposition. *Food Security*, 10(6), 1411–1424.
- Elorrieta, B., Cerdan Schwitzguébel, A., & Torres-Delgado, A. (2022). From success to unrest: The social impacts of tourism in Barcelona. *International Journal of Tourism Cities*, 8(3), 675–702.
- Ericksen, P. J., Ingram, J. S., & Liverman, D. M. (2009). Food security and global environmental change: Emerging challenges. *Environmental Science & Policy*, 12(4), 373–377.
- European Commission. (2024). *State of food security in the EU: A qualitative assessment of food supply and food security in the EU within the framework of the EFSCM*. <https://webgate.ec.europa.eu/circabc-ewpp/d/d/workspace/SpacesStore/2485b5b6-0626-49c7-86b4-72f171dee57c/download>
- Eurostat. (2023). *Persons at risk of poverty or social exclusion by age and sex* [Data set]. https://ec.europa.eu/eurostat/databrowser/view/ilc_peps01n__custom_11655562/bookmark/table?lang=en&bookmarkId=1fe5fbf6-51a6-4b4b-a0d5-b9e715618a34
- FAO. (2017). *The state of food and agriculture. Leveraging food systems for inclusive rural transformation*. <https://openknowledge.fao.org/server/api/core/bitstreams/58fe36c1-b29a-45d7-b684-d3b3287f3f60/content>
- FAO. (2018). *The role of cities in transforming food systems: Sharing lessons from Milan Pact cities*.

- FAO., IFAD., UNICEF., WFP., & WHO. (2021). *The state of food security and nutrition in the world 2021: Transforming food systems for food security, improved nutrition and affordable healthy diets for all*. FAO. <https://doi.org/10.4060/cb4474en>
- FAO, IFAD, UNICEF, WFP, & WHO. (2023). *The state of food security and nutrition in the world 2023: Urbanisation, agrifood systems transformation and healthy diets across the rural–urban continuum*. <https://doi.org/10.4060/cc3017en>
- FAO, IFAD, UNICEF, WFP, & WHO. (2024). *The state of food security and nutrition in the world 2024: Financing to end hunger, food insecurity and malnutrition in all its forms*. <https://doi.org/10.4060/cd1254en>
- Filippini, R., Mazzocchi, C., & Corsi, S. (2019). The contribution of urban food policies toward food security in developing and developed countries: A network analysis approach. *Sustainable Cities and Society*, 47, Article 101506. <https://doi.org/10.1016/j.scs.2019.101506>
- Forster, T., Egal, F., & Puhac, A. (2023). International agendas and urban food system governance: Informing, integrating, and operationalising the SDGs. In A. Moragues-Faus, J. K. Clark, J. Battersby, & A. Davies (Eds.), *Routledge handbook of urban food governance* (pp. 199–219). Routledge.
- Forte-Campos, V., Moral-Benito, E., & Quintana, J. (2021). *A cost of living index for Spanish cities*. Banco de España.
- Freedman, D., Mattison-Faye, A., Alia, K., Guest, A., & Hébert, J. (2014). Comparing farmers' market revenue trends before and after implementing a monetary incentive for recipients of food assistance. *Preventing Chronic Disease*, 11, Article 130347. <https://doi.org/10.5888/pcd11.130347>
- García, X., García-Sierra, M., & Domene, E. (2020). Spatial inequality and its relationship with local food environments: The case of Barcelona. *Applied Geography*, 115, Article 102140.
- García-Sierra, M., Andreu, M., Domene, E., Zerbán, T., López-García, D., & Moragues-Faus, A. (2024). *¿Ciudades que alimentan? Transformemos entornos de comida basura en lugares saludables*. Instituto de Economía, Geografía, y Demografía-IEGD. <https://doi.org/10.20350/digitalCSIC/17012>
- Garratt, E. (2020). Food insecurity in Europe: Who is at risk, and how successful are social benefits in protecting against food insecurity? *Journal of Social Policy*, 49(4), 785–809. <https://doi.org/10.1017/S0047279419000746>
- Gomiero, T. (2016). Soil degradation, land scarcity and food security: Reviewing a complex challenge. *Sustainability*, 8(3), Article 281.
- Halliday, J. (2022). Urban food systems: The case for municipal action. In A. L. Starke (Ed.), *A research agenda for food systems* (pp. 199–219). Edward Elgar Publishing.
- Herrero, A., & Moragues-Faus, A. (2025). City profile: A history of changing urban powers to feed the city of Barcelona. *Cities*, 163, Article 106025.
- High Level Panel of Experts on Food Security and Nutrition. (2020). *Food security and nutrition: Building a global narrative towards 2030*. <http://www.fao.org/3/ca9731en/ca9731en.pdf>
- High Level Panel of Experts on Food Security and Nutrition. (2024). *Strengthening urban and peri-urban food systems to achieve food security and nutrition, in the context of urbanization and rural transformation*. <https://openknowledge.fao.org/server/api/core/bitstreams/cf8cd142-cceb-4e81-8764-c8fbc291ce1b/content>
- IPES-Food. (2017). *Unravelling the food–health nexus: Addressing practices, political economy, and power relations to build healthier food systems*.
- Karpyn, A., Pon, J., Grajeda, S., Wang, R., Merritt, K., Tracy, T., May, H., Sawyer-Morris, G., Halverson, M., & Hunt, A. (2022). Understanding impacts of SNAP fruit and vegetable incentive program at farmers' markets: Findings from a 13-state RCT. *International Journal of Environmental Research and Public Health*, 19(12), Article 7443. <https://doi.org/10.3390/ijerph19127443>

- Kidd, R., & Reynolds, C. (2024). Food policy coherence in local government: Who does what and why? *Food Policy*, 129, Article 102740.
- Lang, T., Barling, D., & Caraher, M. (2009). *Food policy: Integrating health, environment and society* (1st ed.). Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780198567882.001.0001>
- Langemeyer, J., Camps-Calvet, M., Calvet-Mir, L., Barthel, S., & Gómez-Baggethun, E. (2018). Stewardship of urban ecosystem services: Understanding the value(s) of urban gardens in Barcelona. *Landscape and Urban Planning*, 170, 79–89.
- Liverman, D., & Kapadia, K. (2012). Food security, food systems and global environmental change. In J. Ingram, P. Ericksen, & D. Liverman (Eds.), *Food security and global environmental change* (pp. 3–24). Routledge. <https://doi.org/10.4324/9781849776615>
- Llobet-Estany, M. L. (2014). La innovación social en la seguridad alimentaria en Quebec. Algunas lecciones para el contexto español. *Documentación Social*, 174, 71–94.
- Loopstra, R. (2018). Interventions to address household food insecurity in high-income countries. *Proceedings of the Nutrition Society*, 77(3), 270–281. <https://doi.org/10.1017/S002966511800006X>
- MacRae, R. (2011). A joined-up food policy for Canada. *Journal of Hunger & Environmental Nutrition*, 6(4), 424–457. <https://doi.org/10.1080/19320248.2011.627297>
- McKeon, N. (2018). Are equity and sustainability a likely outcome when foxes and chickens share the same coop? Critiquing the concept of multistakeholder governance of food security. In C. Gabay & S. Ilcan (Eds.), *The politics of destination in the 2030 sustainable development goals* (pp. 45–63). Routledge.
- Milan Urban Food Policy Pact. (2015). *Milan urban food policy pact*. <https://www.milanurbanfoodpolicypact.org/wp-content/uploads/2020/12/Milan-Urban-Food-Policy-Pact-EN.pdf>
- Milan Urban Food Policy Pact Secretariat. (2024). *Regionalisation process action plan 2023–25*. <https://www.milanurbanfoodpolicypact.org/wp-content/uploads/2024/04/MUFPP-Regionalisation-Process-Action-Plan-2023-2025.pdf>
- Monsivais, P., Thompson, C., Astbury, C. C., & Penney, T. L. (2021). Environmental approaches to promote healthy eating: Is ensuring affordability and availability enough? *BMJ*, 372, Article n549. <https://doi.org/10.1136/bmj.n549>
- Moragues-Faus, A. (2020). Towards a critical governance framework: Unveiling the political and justice dimensions of urban food partnerships. *The Geographical Journal*, 186(1), 73–86. <https://doi.org/10.1111/geoj.12325>
- Moragues-Faus, A., & Battersby, J. (2021). Urban food policies for a sustainable and just future: Concepts and tools for a renewed agenda. *Food Policy*, 103, Article 102124. <https://doi.org/10.1016/j.foodpol.2021.102124>
- Moragues-Faus, A., Clark, J. K., Battersby, J., & Davies, A. (Eds.). (2022). *Routledge handbook of urban food governance*. Routledge.
- Moragues-Faus, A., & Magaña-González, C. R. (2022). *Alimentando un futuro sostenible: Estudio sobre la situación alimentaria en Barcelona 2022*. Universidad de Barcelona; Fundación Daniel y Nina Carasso. https://www.ub.edu/alimentandounfuturosostenible/documents/informe-alimentacion_una-pag.pdf
- Moragues-Faus, A., Marsden, T., Adlerová, B., & Hausmanová, T. (2020). Building diverse, distributive, and territorialized agrifood economies to deliver sustainability and food security. *Economic Geography*, 96(3), 219–243. <https://doi.org/10.1080/00130095.2020.1749047>
- Moragues-Faus, A., & Morgan, K. (2015). Reframing the foodscape: The emergent world of urban food policy. *Environment and Planning A: Economy and Space*, 47(7), 1558–1573. <https://doi.org/10.1177/0308518X15595754>

- Moragues-Faus, A., Sonnino, R., & Marsden, T. (2017). Exploring European food system vulnerabilities: Towards integrated food security governance. *Environmental Science & Policy*, 75, 184–215. <https://doi.org/10.1016/j.envsci.2017.05.015>
- Nisbett, N., Friel, S., Aryeetey, R., da Silva Gomes, F., Harris, J., Backholer, K., Baker, P., Blue Bird Jernigan, V., & Phulkerd, S. (2021). Equity and expertise in the UN Food Systems Summit. *BMJ Global Health*, 6(7), Article e006569. <https://doi.org/10.1136/bmjgh-2021-006569>
- Oldroyd, L., Eskandari, F., Pratt, C., & Lake, A. A. (2022). The nutritional quality of food parcels provided by food banks and the effectiveness of food banks at reducing food insecurity in developed countries: A mixed-method systematic review. *Journal of Human Nutrition and Dietetics*, 35(6), 1202–1229. <https://doi.org/10.1111/jhn.12994>
- Padró, R., La Rota-Aguilera, M. J., Giocoli, A., Cirera, J., Coll, F., Pons, M., Pino, J., Pili, S., Serrano, T., Villalba, G., & Marull, J. (2020). Assessing the sustainability of contrasting land use scenarios through the socio-ecological integrated analysis (SIA) of the metropolitan green infrastructure in Barcelona. *Landscape and Urban Planning*, 203, Article 103905.
- Parsons, K., & Hawkes, C. (2019). *Policy coherence in food systems*. Food Research Collaboration.
- Patel, R. (2009). Food sovereignty. *The Journal of Peasant Studies*, 36(3), 663–706. <https://doi.org/10.1080/03066150903143079>
- Penne, T., & Goedemé, T. (2021). Can low-income households afford a healthy diet? Insufficient income as a driver of food insecurity in Europe. *Food Policy*, 99, Article 101978. <https://doi.org/10.1016/j.foodpol.2020.101978>
- Pla Estratègic Metropolità de Barcelona. (2021). *Compromís Metropolità 2030*. https://compromismetropolita.cat/modules/custom/pemb_utils/templates/assets/CompromisMetropolita2030_ca.pdf
- Pollard, C. M., & Booth, S. (2019). Food insecurity and hunger in rich countries—It is time for action against inequality. *International Journal of Environmental Research And Public Health*, 16(10), Article 1804.
- Pothukuchi, K., & Kaufman, J. L. (1999). Placing the food system on the urban agenda: The role of municipal institutions in food system planning. *Agriculture and Human Values*, 16(2), 213–224. <https://doi.org/10.1023/A:1007558805953>
- Richardson, K., Steffen, W., Lucht, W., Bendtsen, J., Cornell, S. E., Donges, J. F., Drüke, M., Fetzer, I., Bala, G., von Bloh, W., Feulner, G., Fiedler, S., Gerten, D., Gleeson, T., Hofmann, M., Huiskamp, W., Kummu, M., Mohan, C., Nogués-Bravo, D. . . . Rockström, J. (2023). Earth beyond six of nine planetary boundaries. *Science Advances*, 9(37), <https://doi.org/10.1126/sciadv.adh2458>
- Sibbing, L. V., Candel, J. J., & Termeer, C. J. A. M. (2019). A comparative assessment of local municipal food policy integration in the Netherlands. *International Planning Studies*, 26(1), 56–69. <https://doi.org/10.1080/13563475.2019.1674642>
- Slater, S., Lawrence, M., Wood, B., Serodio, P., Van Den Akker, A., & Baker, P. (2024). The rise of multi-stakeholderism, the power of ultra-processed food corporations, and the implications for global food governance: A network analysis. *Agriculture and Human Values*, 42, 177–192.
- Smaal, S. A., Dessein, J., Wind, B. J., & Rogge, E. (2021). Social justice-oriented narratives in European urban food strategies: Bringing forward redistribution, recognition and representation. *Agriculture and Human Values*, 38(3), 709–727.
- Sonnino, R., Marsden, T., & Moragues-Faus, A. (2016). Relationalities and convergences in food security narratives: Towards a place-based approach. *Transactions of the Institute of British Geographers*, 41(4), 477–489.
- Sonnino, R., & Spayde, J. J. (2014). The “new” urban foodscape: Planning, politics, and power. *Journal of Urban Affairs*, 36(2), 233–246.

- Subramaniam, Y., & Masron, T. A. (2021). Food security and environmental degradation: evidence from developing countries. *GeoJournal*, 86(3), 1141–1153. <https://doi.org/10.1007/s10708-019-10119-w>
- Swinburn, B. A., Kraak, V. I., Allender, S., Atkins, V. J., Baker, P. I., Bogard, J. R., Brinsden, H., Calvillo, A., De Schutter, O., Devarajan, R., Ezzati, M., Friel, S., Goenka, S., Hammond, R. A., Hastings, G., Hawkes, C., Herrero, M., Hovmand, P. S., Howden, M., . . . Dietz, W. H. (2019). The global syndemic of obesity, undernutrition, and climate change: The Lancet Commission report. *The Lancet*, 393(10173), 791–846. [https://doi.org/10.1016/S0140-6736\(18\)32822-8](https://doi.org/10.1016/S0140-6736(18)32822-8)
- Tarasuk, V. (2001). A critical examination of community-based responses to household food insecurity in Canada. *Health Education & Behavior*, 28(4), 487–499. <https://doi.org/10.1177/109019810102800408>
- Turner, D., & Hammelman, C. (2024). Balancing the scales: The potential for socioeconomic mobility through place-based food systems. *Geographical Review*, 115(1/2), 226–242.
- UN-Habitat. (2022). *World cities report 2022: Envisaging the future of cities*. https://unhabitat.org/sites/default/files/2022/06/wcr_2022.pdf
- UNICEF, WHO, & World Bank. (2021). *UNICEF/WHO/World Bank joint child malnutrition estimates: 2021 edition interactive dashboard* [Data set]. <https://data.unicef.org/resources/joint-child-malnutrition-estimates-interactive-dashboard-2021>
- Vara-Sánchez, I., Gallar-Hernández, D., García-García, L., Alonso, N. M., & Moragues-Faus, A. (2021). The co-production of urban food policies: Exploring the emergence of new governance spaces in three Spanish cities. *Food Policy*, 103, Article 102120.
- Walters, V. M., Garden, E., & Chamberlain, K. (2021). Beyond markets: Food poverty and the non-commercial food system. *Food, Culture & Society*, 24(5), 694–711. <https://doi.org/10.1080/15528014.2021.1885593>
- Warshawsky, D. N. (2010). New power relations served here: The growth of food banking in Chicago. *Geoforum*, 41(5), 763–775. <https://doi.org/10.1016/j.geoforum.2010.04.008>
- Willett, W., Rockström, J., Loken, B., Springmann, M., Lang, T., Vermeulen, S., Garnett, T., Tilman, D., De Clerck, F., Wood, A., Jonell, M., Clark, M., Gordon, L. J., Fanzo, J., Hawkes, C., Zurayk, R., Rivera, J. A., De Vries, W., Sibanda, M. L. . . . Murray, C. J. L. (2019). Food in the anthropocene: the EAT-Lancet commission on healthy diets from sustainable food systems. *The Lancet*, 393(10170), 447–492. [https://doi.org/10.1016/S0140-6736\(18\)31788-4](https://doi.org/10.1016/S0140-6736(18)31788-4)
- XDAA. (2021). *La crisi alimentària i la resposta de la ciutat de Barcelona*. https://www.barcelona.cat/barcelonainclusiva/ca/2021/12/Informe_crisi_alimentaria_resposta_Barcelona.pdf
- Zerbian, T., Moragues-Faus, A., López-García, D., & García-García, L. (2024). Territorialising knowledge-policy interfaces: Lessons from urban food governance spaces. *Environmental Science & Policy*, 161, Article 103883.

About the Authors



María José LaRota-Aguilera is a researcher at the Food Action Research Observatory (FARO) at the University of Barcelona. She studies urban and metropolitan food systems through a systemic approach rooted in sustainability and social justice. Her work focuses on food security and the right to food. With over a decade of experience in applied, participatory, and transdisciplinary research, as well as public policy advising, she collaborates with institutions and grassroots initiatives to promote just and resilient food systems.



Ana Moragues-Faus is the director of the Food Action and Research Observatory (FARO) and research associate at the University of Barcelona, and a leading scholar in food systems governance. Her research focuses on food justice, urban food governance, and the transformation of food systems through participatory and transdisciplinary approaches. With a background in critical social studies, she has contributed to international policy debates and collaborates with civil society and institutions to promote sustainable and equitable food futures.

Just Food for Kids? School Food Management Models and Sustainable Procurement in France and Germany

Birgit Hoinle ¹  and Jocelyn Parot ^{2,3} 

¹ Department of Societal Transition and Agriculture, University of Hohenheim, Germany

² Professorship of Organic Farming, Justus Liebig University Giessen, Germany

³ URGENCI, France

Correspondence: Birgit Hoinle (birgit.hoinle@uni-hohenheim.de)

Submitted: 1 November 2024 **Accepted:** 1 April 2025 **Published:** 14 July 2025

Issue: This article is part of the issue “Perspectives on Food in the Sustainable City” edited by Birgit Hoinle (University of Hohenheim), Alena Birnbaum (University of Kassel), and Petra Lütke (University of Münster), fully open access at <https://doi.org/10.17645/up.i395>

Abstract

Biodiversity loss, climate change, rising indices of food insecurity, and increasing amounts of food waste underscore the need for a transition toward more sustainable and just food systems. Public food procurement can be considered an important leverage point in sustainable transition processes. Based on a conceptual framework that combines sustainability, just transition, and the role of public food procurement, this study focuses on the role of municipalities in France (Normandy and Brittany) and Germany (Bavaria and Baden-Württemberg) and analyzes their sustainability efforts. Seventeen urban and rural municipalities have been selected as they all engage with the issue of sustainable food but employ a variety of different models of school food management. Our methodology is based on a comparative approach, combining literature analysis and qualitative expert interviews with stakeholders from French and German local municipalities. Our analysis focuses on the ecological, economic, and social dimensions of sustainability, including organic share, food waste, local food, accessibility, diversity, education, and participation. Our research aim is to identify potentials and challenges in just food system transitions and appropriate policy measures for promoting sustainable public procurement in school canteens. The results show that direct public management models, that are not externalized through outsourcing to private catering companies, have more potential for defining high organic standards and for integrating local food into regional value chains.

Keywords

food justice; food policy; just transition; local food; organic food; public procurement; school food; sustainability

1. Introduction

The agri-food system contributes up to 30% of global greenhouse emissions (Crippa et al., 2021). Agricultural land degradation, increasing rates of food waste, rising incidences of food poverty, and child obesity in European countries underscore the need for a transition toward more sustainable and just food systems (Kovacs et al., 2020; Scientific Advisory Board on Agricultural Policy, Food and Consumer Health Protection, 2023). Local municipalities are considered important actors in food system transitions (Baldy, 2019). The “strategic role of cities” in developing sustainable and more inclusive food systems is also emphasized in public policy statements such as the Milan Urban Food Policy Pact (2015, p. 1). The reorientation of school food programs to “provide food that is healthy, local and regionally sourced, seasonal and sustainably produced” is one of the main recommendations in this Pact (Milan Urban Food Policy Pact, 2015, p. 4). Thus, due to its high purchasing power and influence on shaping young citizens’ food preferences, the sector of public food procurement can be considered an important leverage point in transitions toward sustainable food systems (Andhov et al., 2024, p. 203; Stein et al., 2022). For instance, in Germany, public catering establishments serve 12.4 billion meals every year (Speck et al., 2022, p. 2288). However, in the research on sustainable transitions, the issue of school food is rarely addressed. Sanz Sanz et al. (2022) perceive a research need regarding the development of policy measures and the incorporation of local stakeholders in decision-making on school food policies. With our study, we aim to contribute to this research gap with a comparative approach that analyzes different school food management models in two countries.

In a literature review with a global scope, Molin et al. (2021, p. 15) demonstrate that articles on sustainable public food procurement in Europe focus mainly on ecological sustainability, whereas social sustainability is addressed in studies developed in North and South America. The ecological dimension is mainly addressed through the issues of organic food and food waste (Molin et al., 2021, p. 10), whereas the economic dimension is mostly framed by the inclusion of local farmers in short food supply chains. In our analysis, we address the lack of studies on social sustainability by developing a conceptual framework that integrates all three dimensions of sustainability. For this purpose, we connect the social dimension of sustainability with the concept of just transitions (Swilling, 2020) in order to explore approaches for just and sustainable food in public school food procurement (PSFP). This brings us to our main research question: What are the potentials and challenges of different school food management models and what key policy measures are needed to overcome these challenges in order to promote just and sustainable school food procurement?

To address this question, we conduct a comparative analysis of school food management models in France and Germany. These two countries were selected due to their contrasting procurement approaches. In France, local authorities have a long history of providing school meals, with municipalities responsible for primary school meals, departments for middle school (*collège*) meals, and regions for high school (*lycée*) meals. In contrast, in Germany, school meals have long been considered a family affair and not a responsibility of public authorities. In recent decades, school food provision has largely been outsourced to private catering companies. In some schools, parents have formed non-profit organizations to prepare meals for students based on voluntary work.

Based on the existing scientific literature, our analysis focuses on three types of school food management: (a) direct public management (DPM), (b) externalized private management (EPM), and (c) community management (CM). Seventeen municipalities in the regions of Normandy and Brittany (in France) and

Bavaria and Baden-Württemberg (in Germany) were selected in order to compare management models for promoting just and sustainable school food. Our methodology integrates literature analysis with qualitative expert interviews. In the analysis, we focus on the ecological and economic dimensions of sustainability, including organic share, food waste, and the involvement of regional networks with local farmers, as well as the social dimensions of sustainability, such as accessibility, education, participation, and diversity. Our research aims to identify potentials and challenges for sustainable PSFP and to formulate policy recommendations based on empirical insights.

2. Conceptual Framework

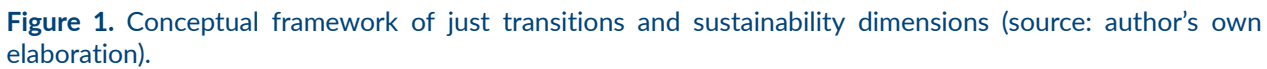
Our conceptual framework combines the approach of just transition with the growing body of literature on PSFP by emphasizing the social dimension of sustainability (see Figure 1).

2.1. Just Transitions

With the Sustainable Development Goals, the United Nations pronounced the need for a transformation toward a more sustainable global development. A growing body of literature on sustainable transitions seeks solutions for global challenges, such as biodiversity loss or increasing social inequalities (Fischer & Newig, 2016; Geels, 2019; Loorbach et al., 2017). However, many of these studies focus mainly on technical solutions and environmental impacts, leaving out social justice aspects. Based on the work of environmental justice scientists and activists (Martínez-Alier et al., 2014), several authors have developed the concept of just transitions in order to emphasize the often neglected social justice dimension within sustainable transitions (Swilling, 2020). However, until now, studies on just transitions have mainly focused on the energy sector (Tribaldos & Kortetmäki, 2022, p. 244). Nevertheless, recent contributions relate the concept of just transitions with issues of food and dietary transitions (Kaljonen et al., 2021; Tschersich & Kok, 2022).

Just transition authors distinguish several dimensions of justice: distributive justice, recognition justice, and procedural justice. Tribaldos and Kortetmäki (2022) have developed a scheme on how to apply just transition principles to the agri-food system. For instance, distributive justice includes the right to food in the sense that the whole population should have access to “sufficient nutritious, adequate and safe food at all times” (Tribaldos & Kortetmäki, 2022, p. 248). Recognition justice embraces the acknowledgment of traditional food knowledge about local food, as well as the recognition of “diverse visions of producing, preparing, and eating food” (Tribaldos & Kortetmäki, 2022, p. 248). Procedural justice involves access to information as a precondition for participation in democratic decision-making processes on the food system (Tribaldos & Kortetmäki, 2022, p. 248). Whereas distributive justice addresses the outcome of just transitions, recognition and procedural justice refer to the process of how social groups can influence decisions on the food system. Thus, all justice dimensions are complementary. The graph in Figure 1 shows how the aspects of just transition interconnect with the sustainability dimensions, especially the social dimension.

The interconnection of just transition with the sustainability dimensions provides a useful conceptual framework for structuring the analysis of the case study.



Public food procurement has been recognized for its potential to contribute to more sustainable food systems (Kujala et al., 2022, p. 3323; Stein et al., 2024). School food procurement, in particular, has been highlighted as an important “driver for food security and nutrition” (Filippini et al., 2018, p. 1). Also, from a public health perspective, schools are seen as an ideal setting to promote healthy eating habits among young generations (Nordgård Vik, 2022, p. 112). Graça et al. (2022) emphasize that school meals have a multi-sectoral influence on society, impacting economic development, social protection, and environmental sustainability (p. 324). In this sense, PSFP could act as a leverage point for transitions to sustainable food systems.

We undertook a qualitative literature analysis to uncover the state of key factors and barriers for more sustainable school meals in recent European scientific publications. This analysis revealed that major barriers are legal constraints and a lack of regional networks, while key factors for sustainable PSFP include cooperation throughout the value chain and motivation of public authorities and kitchen staff. The four most relevant key factors and barriers will be explained in the following paragraphs.

Legal constraints were identified as one of the major barriers. The European competition law 2014/14 (EU, 2014) was introduced to promote free competition across the single European market and to secure equal opportunities for all bidders (non-discrimination norm). In public tenders issued by municipalities to find a catering service for school meals, economic criteria are the most frequently prioritized. Several articles cite the law on public procurement as a major “constraint” for local municipalities (Risku-Norja & Løes, 2017, p. 117). Whereas organic certification can be used as a purchasing criterion, specifying local origin is not permitted due to EU regulations (Schäfer & Haack, 2023, p. 5). Although EU Green Public Procurement guidelines provide some voluntary tools for integrating sustainability criteria, public authorities rarely include them in public tenders due to legal uncertainties (Mengual et al., 2024; Schäfer & Haack, 2023, p. 5). As a result, municipalities are discouraged from procuring food from small-scale local providers. In spite of these restrictions, some municipalities are exploring new procurement strategies to source food from local providers, such as dividing orders into smaller batches or demanding certain local or seasonal varieties (Guillaume et al., 2022; Lassen et al., 2023). However, the application of these strategies requires considerable purchasing expertise, active engagement with potential suppliers, and familiarity with their products (Risku-Norja & Løes, 2017, p. 115).

Another barrier is the absence of regional networks involving organic or small-scale farmers (Hoinle & Klosterkamp, 2023). The lack of processing infrastructure is a crucial constraint. Braun et al. (2018) highlight the situation in the Brandenburg region, where no preprocessing facilities exist, yet school catering services rely heavily on preprocessed food (p. 1). For example, school cooks need a high quantity of already pre-peeled potatoes.

Cooperation throughout the food value chain is a key factor for sustainable school food. To source school meals from local providers, the creation of networks between producers, processors, and canteens is essential. Kraljevic and Zanasi (2023) highlight that direct relationships based on mutual trust between farmers and canteens—called “social proximity”—are crucial for the development of short food supply chains as they reduce transaction costs and allow more transparency about the origin of the products (p. 134). Sanz Sanz et al. (2022) emphasize the possibilities for niche innovations by small and medium enterprises (SMEs) entering the market when school food services were transferred to a central municipal kitchen in Avignon. The canteens formed new partnerships with SMEs, which developed innovative solutions for processing local and fresh fruits and vegetables for the school cooks (Sanz Sanz et al., 2022, p. 10).

A second key factor identified in the literature analysis is the motivation of key actors, namely public officers and kitchen staff. As demand increases for more sustainable and less meat-based dishes, new menu planning strategies become necessary. Graça et al. (2022) describe the need to “improve the nutritional profile and sensory appeal of plant-based meals [and] increase the variety and diversity of plant-based meal options” (p. 329). However, many kitchens face time and economic constraints, with deteriorating working conditions as an increasing number of cooks are employed on a flexible or voluntary basis only. Greater investment in training and qualifications is needed to offer vegetarian dishes that go beyond processed meat substitutes. This need for transformation is underscored by Lopez et al. (2020): “The transformation can only succeed if employees in the out-of-home catering sector are able to prepare tasty, creative and nutritionally complete low-meat or plant-based meals” (p. 12). All in all, decentralized school food provision systems with on-site kitchens in which cooks prepare meals at schools or central kitchens run by municipalities seem to have more flexibility to integrate fresh and sustainable products and to involve staff than systems of externalized provision (Magrini et al., 2021; Sanz Sanz et al., 2022; Smith et al., 2015).

The comparison across Europe shows that management models play a critical role in promoting or hindering sustainability outcomes. There is a clear distinction between municipalities that provide food service through their own kitchens and those that work with an external provider. For this reason, our analysis focuses on three different management models: DPM, EPM, and CM. CM refers to various forms of local non-profit organizations (often founded by parents) that prepare school meals in a self-organized manner.

3. Material and Methods

3.1. Case Study Descriptions

Our methodological approach is based on a comparative analysis between two case studies in France and Germany, chosen because of their contrasting school food procurement approaches; one pursues a more nationally guided model with a strong public administration base, the other is a decentralized approach with a higher level of outsourcing from private providers.

School catering in France was established as a public service before the Second World War (Perignon et al., 2023). There is a long tradition of offering whole-day childcare services, including lunch, at primary schools. Currently, 60% of French students have lunch at school four times a week. Sixty percent of school meals in France are provided by school catering services directly managed by local public authorities under the DPM model (Ministère de l'Agriculture et de la Souveraineté Alimentaire, 2023). The survey report by the Association of Mayors in France indicates that 48% of the local authorities are under the DPM model for their school food management, whereas 35% follow a mixed model and 17% are externalizing school food service to private catering companies (Association des Maires de France, 2024, p. 6). The school food system is characterized by national standards for public canteens. In 2010, the Programme national pour l'alimentation was introduced to encourage the use of local products in both public and private catering. In 2018, the newly adopted national EGalim law on agriculture and food requires all catering services—both public and private—to use at least 50% sustainable or high-quality certified-origin labeled food products, including 20% organic, by 2022 (Sanz Sanz et al., 2022, p. 5). Additionally, all catering services are now required to conduct a food loss and waste (FLW) assessment and to implement a strategy to reduce FLW. The aim is that reducing FLW will lower the volume of food purchased, thus creating financial leeway to procure more costly organic products. This law has applied to schools, universities, public sector institutions, hospitals, and private enterprises since January 2024. There are no penalties for non-compliance, which explains why only 18% of municipalities were meeting the target in 2024 (Association des Maires de France, 2024, p. 4). However, an increasing amount of subsidies is now conditional upon compliance with the law. Managers are required to keep their purchasing data updated in a tracking table, which must be uploaded to a platform managed by the Ministry of Agriculture and Food Sovereignty.

In contrast, 89% of school meals in Germany are provided by private catering companies (Jansen, 2019, p. 70), indicating the prevalence of the EPM model. This is partly due to historical reasons, as food was traditionally seen as a family matter, with children, particularly in Southern Germany, going home at midday for lunch. This tradition has evolved, creating challenges for local municipalities in providing lunch at school, which accounts for the widespread use of externalized services. In response to the lack of school lunch options, several parental initiatives have been established in the past decades, making CM also a common model in Germany. DPM, on the other hand, is relatively rare (with exemptions such as Darmstadt).

National guidelines—such as those provided by the German Society for Nutrition (DGE)—remain voluntary. Due to the federal structure of the education system, the DGE recommendations are only mandatory in five of the 16 federal states (Kuharic & Zander, 2025, p. 127). Sustainability is promoted through various incentives, such as certification or labels. For example, public canteens can obtain DGE certification or the newly established public canteen organic certification. Cities joining the Organic Cities Network (OCN) can demonstrate their commitment to the “Organic City” label, for which no minimum criteria is required (Böhm et al., 2025). The German Food and Nutrition Strategy published in 2024 by the national government sets ambitious goals for improving food quality in school canteens, such as increasing the share of organic and plant-based products, promoting regional networks, reducing food waste, and creating more sustainable food environments. However, these targets are not binding (German Federal Ministry of Food and Agriculture, 2024).

In order to compare the sustainability potentials of the three school food management models (DPM, EM, CM), we selected two federal states in Southern Germany and two regions in Northern France to analyze their advantages and shortcomings. Bavaria and Baden-Württemberg were chosen due to both the challenges posed by the long-term neglect of food as a policy issue, and the growing regional engagement with sustainability initiatives, such as the OCN. In France, the Brittany region was selected because of the presence of a sustainable municipalities network (Bretagne rurale et urbaine pour un développement durable, BRUDED). We also included the neighboring region of Normandy, where one of the authors is an active board member of a municipality-led catering syndicate. We selected municipalities that already show a high level of engagement with increasing the organic and local share of food in schools, ranging from 25% to 100% organic and from 50% to 100% local in the case of France. In Germany, there are no statistics about the organic share in public procurement, only estimates for some cities.

3.2. Methodology

Our approach is based on a transdisciplinary perspective that, as described by Lang et al. (2012), involves co-creative processes with local stakeholders to co-design solutions for real-life sustainability problems. In this study, we analyze the issue of school food from three perspectives: as scientists, as practitioners, and as parents. This multifaceted role provides us with a range of insights into the topic, as well as direct contact with local stakeholders. One of the authors is a municipal council member sitting on the board of an intercommunal school food syndicate, while the other is a member of a Food Policy Council. These positions provide deeper insights, as well as challenges and opportunities, for integrating findings into practical policymaking, in accordance with the transdisciplinary approach.

Our study is based on empirical research in the regions of Brittany and Normandy, as well as the states of Baden-Württemberg and Bavaria. First, we conducted 17 semi-structured interviews with school food managers, including local government employees and municipal council members (see chart of interviewees in the Supplementary Material). We sought interviewees from both rural and urban municipalities that were already engaged in advancing sustainability in school meals. Additionally, we aimed to include representatives from each of the three school food management models. In France, we conducted more interviews (six) with participants from the DPM model, as this model is more prevalent there. Our analysis includes only one interviewee from an EPM model (FR05), although three other French interviewees shared their previous personal experiences with this model. Since the EPM and CM models are more common in

Germany, we selected six interviewees from the EPM model and two from the CM model. In one of the two CM cases, this approach was abandoned due to a lack of public support and the fact that the school transitioned to the EPM model. Therefore, the interview focused on the experiences with both models. In one case we included an interviewee from the region of Southern Hesse (a neighboring region to Baden-Württemberg) due to the difficulty in finding interviewees from a DPM case in Germany. The questionnaire we used, translated into French and German, can be found in the Supplementary Material in its English version.

The second step consisted of a comparative data analysis. We transcribed the interviews using sonix.ai and developed a coding system that integrated the three sustainability dimensions (social, ecological, economic), as well as the three school food management models, with subcodes for their potentials and challenges (see codebook in the Supplementary Material). We specified each sustainability dimension with analytical criteria (subcodes) to gain deeper insights for the comparison. For example, the ecological dimension was subdivided into “food waste” and “organic share.” These sustainability criteria were defined according to the system literature analysis of Molin et al. (2021) on sustainability in academic articles about public procurement (see Introduction). Using the conceptual framework (Figure 1), we conducted a comparative analysis of the school food management models to identify their potentials and challenges for promoting more sustainable and just school meals.

4. Empirical Results

The interview results were analyzed across the three dimensions of sustainability. For each of these dimensions, and for each of the school food management models, we present key potentials and challenges. Our aim is to show how school food management models differ in their potential to achieve more sustainable school meals.

4.1. Ecological Dimensions: Organic Share and Food Waste

In France, the EGalim law provides a legal framework regarding two critical aspects of the ecological dimension of sustainability: food waste strategy and the share of organic ingredients. In Germany, there are no mandatory national guidelines. Instead, local authorities can set their own targets if they wish. As a result, any engagement with food waste reduction or promotion of organic food depends on voluntary initiatives led by motivated individuals.

For the DPM model, the primary challenge identified by the French interviewees is the danger of a backlash against the legal framework: Municipalities feel pressured to improve without adequate support, and some are starting to opt out of the EGalim objectives (FR06). Yet, in most of the interviews, the DPM model is described as presenting the best potential in terms of the ecological dimension of sustainability. In this configuration, elected members of the municipal council have direct control of the budget, which is crucial for initiating the transition (FR02, FR04). A similar potential was observed in the only German case of this model (DE01), where a target of achieving 50% organic share was established, following an official resolution by the municipal council. With the involvement of the municipality-owned enterprise EAD (Eigenbetrieb für kommunale Aufgaben und Dienstleistungen), this target has been implemented gradually with a current share of approximately 27.5% (Greiner & Ebert, 2024).

Regarding the EPM model, a common issue is the difficulty in finding catering companies willing to apply for public tenders (DE04, DE07, DE09). School food is not considered a profitable business. This hinders the ability to set high organic standards. As explained by DE04, school head teachers are already busy with other (pedagogical) issues and have very low time capacities to engage with public tender guidelines. Similarly, due to the decentralized administrative structure, it depends on each single school headship, city administration, or the catering company itself, whether food waste measurements are undertaken or not. Therefore, most municipalities have no data at all either about food waste or about the current organic share. The interviews conducted in the French context were consistent in this regard. In particular, the interviewees from a major urban center revealed the contract with a private catering company will soon be broken (FR05 and FR05b). This decision was due to a lack of transparency about product sourcing and repeated failures to implement sustainability measures. In another interview, the emphasis was on the profit-making pressure:

As a head cook who keeps a budget...what I've only experienced in catering companies is that they give you a bonus if you stick to the budget. And so, to keep within budget, you have to buy at the lowest price...you're provided with a price list with higher-end products, but you know that you're going to come out ahead in terms of costs, right? And so, at the end of the day, if you run out of costs, you get a slap on the wrist, right? (FR08)

As for the potentials, cities involved in the OCN demonstrated efforts to establish higher organic standards (DE02, DE03, DE06). The interviewees mentioned that it is crucial to have a municipal council's decision with concrete targets.

The CM model is challenging to compare, as each association is structured differently depending on local conditions. In one case, a German university town, the kitchen transitioned to organic food some years ago. In another case in a rural Bavarian municipality, according to the interviewee (DE09), parents are not interested in organic food. As this is a very rural region, the interviewee highlighted the potential to source organic ingredients from nearby farmers. In this case, the school moved to the EPM model eight years ago due to a lack of municipal support. Similarly, in the French case, the main challenge for CM was the dependence on municipal support to cover all the costs of going organic (FR07).

According to the interviewees, the CM model often serves small schools that fall below the financial threshold for European-wide public tenders. Therefore, this model has greater flexibility for ordering directly from local producers. During an interview, a cook (DE08) showed their list of regional organic food providers. However, she also noted the difficulty in obtaining processed organic products in large quantities. CM school canteens can adopt creative methods to combat food waste, such as parents who collaborate with the cooking team being allowed to take leftovers home. In one canteen, a "Bunny-App" was developed to inform students about leftovers for their pets (DE08).

4.2. Economic Dimensions: Regional Networks With Local Farmers

A key difference that came up during the interviews was the divergent nuances between the French *local* and the German *Regionalität*. In the French context, the emphasis is on direct relationships with nearby small-scale producers. In Germany, the focus is more on assembling robust value chains in the broader region. There are many conceptual discussions about what exactly *Regionalität* means, whether it is about products coming from the same federal state, from a 100-kilometer radius, or from a small-scale farmer unit (DE06).

In the interviews conducted with actors engaged in a DPM model, the difficulty in complying with strict procurement rules, from both the producers' and the canteens' perspectives, was identified as the major challenge. In France particularly, the rules are considered even stricter for public entities than for private businesses (FR01, FR03, FR04). According to one of the German interviewees, the municipal enterprise allows for more possibilities to source from local producers, but one of the biggest challenges is to get processed regional foods: "It always comes to the same conclusion: We need more processors in this area. There are farmers all around us. The problem is always the intermediary stage" (DE01).

On the other hand, a major potential of the DPM model is the absence of any pressure to make a profit. The financial aim is to achieve a balanced budget (FR01, FR03, FR04, FR08). This provides greater flexibility in working with local and organic producers.

Within the framework of the EPM model, city administrations are responsible for conducting public tenders to select catering companies. This process occurs approximately every five years and, in Bavaria, individual schools manage the tendering themselves. When public tenders exceed a specific threshold, an EU-wide tender is required, in order to guarantee free competition. Interviewees working within the EPM model complain that this makes it impossible to source products from regional suppliers or local farmers.

With outsourced service, there is reduced transparency regarding the origin of the products. Catering companies typically state their commitment to regional and seasonal food on their website, but interviewees report that no concrete information is available (DE07). According to one of the interviewees, this is a structural problem:

The market is basically still organized on a supra-regional basis. You can change things a bit through small projects in individual product areas. But to change the market as a whole, you basically need a completely different political framework at a different level. (DE03)

Three interviewees reported having been able to integrate "regionality" into public tenders by developing workaround strategies (DE02, DE03, DE06): "We try indirect routes" (DE03). In one case, a public tender description was developed that requires catering companies to offer pedagogical activities (e.g., farm tours or canteen visits; DE02). This implies that the companies and farms should not be more than a one-hour bus ride away. In another case, a city council resolution set a target of 30% organic and regional food in public entities by 2025 (DE06). The interviewee, who is also the OCN coordinator of that municipality, developed a public tender template that includes CO₂ emissions and a 100-kilometer radius. However, additional efforts are necessary: "We do a lot of networking, connecting farmers and canteens. It's crucial to integrate processing structures" (DE06). In this case, new value chains were created between organic potato processors and canteens. Achieving this is only possible through strong personal engagement from public administration employees.

Regarding the CM model, DE09 emphasized that the town has significant potential for developing regional organic value chains. In her view, a DPM model with a municipal enterprise providing food for schools and the local retirement home could strengthen these chains:

We still have local farmers, dairy farmers...we still have a local butcher. You could strengthen this structure and not leave it to the big farmers, big industry. However, this potential is not being utilized in the current situation as the kitchen gets the food from a big retailer. (DE09)

However, up until now, this potential of integrating local farmers into school food value chains, which is specific to rural areas, remains underexplored in this case.

The interviewees from CM models in both countries stressed the (potential) role of school canteens in supporting local economies, especially in rural areas. The geographical proximity makes it easier for school food managers to build strong long-term connections with local suppliers. This is more challenging for urban school canteens. One interviewee explained how direct relationships can be established for several product groups, including vegetables, dairy products, meat from a local butcher, and corn from a regional mill (DE08). The challenge lies in the logistics. There's a need for digital matching platforms which make it easier to find regional providers. The CM model has significant potential for the integration of seasonal products. For example, one canteen introduced a campaign week focused on seasonal recipes: "It was only possible due to the voluntary work of the parents. The cooking parents spent two hours washing the green cabbage" (DE08). According to the French association's president, whom we interviewed, the key potential of this model lies in the freedom of action:

Nobody tells us what to do. I mean, of course we have to respect quality, we have controls and all that....But we don't have anyone to tell us who to buy from. So that's really the big advantage in being able to, you know, get carrots from such-and-such a market gardener, or whatever. (FR07)

4.3. Social Dimensions: Accessibility, Participation, Education, Diversity

A key aspect of the social dimension of sustainability is accessibility, which relates to the distributive justice dimension of just transition. In the French cases, income-based pricing models are prevalent, whereas in Germany, families with a low income can apply to receive financial assistance through the national Bildungs- und Teilhabepaket (a general education and inclusion package). If applicants comply with certain social criteria, they receive meals for free or at a significantly reduced price. Generally, municipalities provide subsidies for school catering, but the amount of the subsidy depends on decisions made by the municipality council and on the economic capacities of each city. The just transition dimension of recognition is analyzed by examining whether, and to what extent, the diverse food habits of children from migrant backgrounds are considered in menu planning. The procedural justice dimension is assessed by examining participation and education, such as whether students or parents can express their needs and demands through a school board.

The DPM model appears to facilitate the implementation of a social pricing scheme for canteens, although other models could also support such measures. All of the French DPM models in our sample use social pricing based on parents' incomes. In many cases, the lowest income households even have free access to the canteen. In France, a legal mechanism, called "Cantine à 1 euro," guarantees state support to compensate rural municipalities by offering meals priced at just one euro. In return, the municipality must comply with EGalim rules and, once a year, upload a financial database proving their achievements in a state-managed online platform.

Another potential of the DPM model is the ability to implement various participation mechanisms. This applies at both the school level and the local level. At the school level, for example, “children can efficiently be involved in menu composition, which is a way to cut the distance between them and the central kitchen, but also to educate them about sustainable, seasonal, healthy food” (FR01). At the local level, the elected members of the municipal council are closely involved in governance. For example, the school food management organization where FR01 is working is structured as an intermunicipal syndicate for school food management, each member municipality is represented by two members of its own municipal council. In small municipalities, this structure ensures strong representation for parents. It is noteworthy that this syndicate was initially created as an association (a CM model), before transitioning into a DPM in order to become more professional.

In the German context, there is only one EPM case with strong cooperation with the local Food Policy Council. In this case, members of the city administration participate in the working groups of the Food Policy Council and can seek advice from the Council when developing public tenders or for networking activities. In some cases, schools have school boards (“quality circles”) as a means of enhancing participation, in which representatives of pupils, teachers, and catering companies discuss together (DE02). However, “participation” is limited to feedback systems, such as liking or disliking the daily menu with smiley faces, meaning no substantive participation formats are encouraged.

In both the German and French contexts, interviewees in every municipality named at least one pedagogical project about sustainable food. This observation holds true regardless of the management models. However, a structural approach to integrate sustainable food education into the curricula of all schools, “just like maths or German” (DE02), seems to be missing. Here, a crucial challenge expressed is the German multi-level system of political responsibilities. While education is the responsibility of federal entities, the coordination of school social work (e.g., whole-day childcare) and catering organization lie under municipal jurisdiction. Thus, coordinating PSFP and education appears almost impossible within the current political framework.

One of the German schools is situated in a rural area and offers an example of how school food education could be linked to a school garden (DE07). In this case, a teaching assistant leads a working group (“garden club”) of students as they cultivate local vegetables and fruits in the garden. The teaching assistant highlights the knowledge that some students with a migration background have from their grandmothers and grandfathers, especially regarding the properties of medicinal herbs. Participants can use a school kitchen for processing the harvest. One of the schools is leading a pedagogical approach aimed at making the farmers and the work behind products more visible via portraits exposed in the canteens (DE06). However, as stated above, these examples depend on the engagement of certain teachers or project managers in individual schools or cities, rather than forming part of a broader, more comprehensive approach.

Regarding the aspect of diversity reflected in menu planning, all German EPM models offer pork-free meal options. For most interviewees, diversity was not seen as a big issue. In the French interviews, school food managers expressed resistance from municipal personnel to adapt to different food habits, as well as a lack of motivation to propose different options beyond the weekly vegetarian meal. Indeed, all the interviewees wanted to set boundaries around the “surge of special diets” (FR01), such as vegetarian, vegan, or halal, because they were concerned by the increased workload needed to plan, prepare, and serve a larger variety of different meals. Others underlined that their cities feature a high percentage of immigrants, which could drive innovative diversification in menu planning (DE03, DE04, FR02, FR06).

Regarding accessibility, the EPM model makes it more difficult for municipalities to influence pricing. Part of the interviewees see themselves as dependent on market dynamics:

The price trend is getting more and more expensive, where some families say: I have three children, each at school. I have to put each of them in all-day care because both [parents] have to work so that we can afford the rent. And how are we supposed to pay five euros a day for food for three children? It's not possible. (DE04)

Despite existing subsidies, families with several children face a significant financial burden.

The CM model is the most appropriate one to strengthen the procedural justice dimension (participation), but it is highly dependent on the voluntary work of parents. Due to increases in both parents working and after school closures during Covid-19, it has become challenging to find enough volunteers to help in the kitchen. One interviewee reported that there is a slight gender gap in the volunteer workforce, with more mothers and grandmothers involved in the cooking team. Also, the cook highlights that it is “a lot of work” (DE08) to guide volunteers and integrate them into the cooking process. Although the CM model has significant potential for involving students in menu planning and cooking, and integrating their feedback, the interviewees in both countries stated that they abstained from it because it would imply too much work.

The German CM model displays the strongest efforts to integrate dishes from diverse cultural backgrounds into the menu planning. As stated by one interviewee (DE08), a parent with a Moroccan background proposed a recipe with couscous and vegetables from her home region. The cook also expressed openness to aligning menu planning with pedagogical activities about sustainable food. For example, one of the schools participated in the pulse week organized by the Food Policy Council. Additionally, parents' voluntary work helps to keep meal prices very low. The cook emphasized that it was always an important goal of the association “to be able to offer a warm lunch for everyone at a reasonable price. So that it remains affordable for families with several children and more afternoon lessons” (DE08). This shows that the CM model has also strong potential for the recognition and distributive justice aspects.

In Table 1, we summarize the challenges and potentials for each model and for each sustainability dimension. The “+” shows the potentials, whereas “–” stands for the challenges.

5. Discussion

5.1. Key Findings

Our research has highlighted a shared awareness, expressed by all interviewed school canteen managers, of the social importance of common meals, emphasizing the social dimension of sustainability. The interviews revealed a common understanding of all the three dimensions of sustainability. None of the interviewees reduced sustainability to merely certified organic food. The local (in France) or regional (in Germany) aspect of sustainability appears to be taking priority over the ecological dimension, a phenomenon previously described by Morgane Esnault (2023). Additionally, the importance of the social accessibility of food has been emphasized throughout the study, particularly in the current context of rising food prices. This underlines the importance of the interplay between different sustainability dimensions in planning PSFP.

Table 1. Overview of challenges and potentials for each food management model and sustainability dimension.

School Food Management Model	Dimensions of Sustainability					
	Environmental (organic share, FLW)		Economic (local producers, regional value chains)		Social (accessibility, working conditions participation, diversity)	
	+	–	+	–	+	–
DPM model	Elected decision-makers have hands-on control of the purchasing power and can set high organic standards	Risk of backlash from high standard	No need to make profit: more margin for local and organic	Challenge to get processed regional organic food	Social pricing is easy to implement	Public employees' disinterest in adapting to diverse food habits
EPM model	Efficiency in sourcing organic products through existing platforms	Pressure to make profit, lack of transparency. Food waste reduction efforts are voluntarily and often organized as pedagogical projects	Cheaper products due to economies of scales	No integration of local food due to requirements of EU procurement law	Several cases with high engagement with pedagogical projects	Low acceptance rate by pupils
CM model	More space of action for going more organic than required	Often depending on public support to achieve environmental goals	Freedom to use own selection criteria and buy directly from local producers	Dependency on volunteers, non-professionals	Participation and education projects are easier due to the proximity	Limited workforce, voluntary help is often gendered

Source: Authors' own elaboration.

Regarding the just transition dimensions, our empirical insights reveal a great emphasis on “distributive justice” (Tribaldos & Kortetmäki, 2022) in current efforts for sustainable school food procurement. The idea of equal access for every child to healthy, sustainable food is implemented in France through social pricing systems. In Germany, low-income families can receive subsidies for school meals. However, it was shown that municipalities within the EPM model are dependent on finding catering companies when they issue a public tender. As a result, the catering company effectively defines the price, thus limiting accessibility. The dimensions of “recognition justice” and “procedural justice” (Tribaldos & Kortetmäki, 2022) are not pursued to the same extent. This is particularly true of recognition justice, as the food habits of minorities are perceived as an additional burden for staff, rather than something to be valued. Only a few interviewees saw the potential for innovative menu planning through integrating recipes from other cultural backgrounds that, for example, contain pulses as plant-based proteins (Graça et al., 2022; Magrini et al., 2021). Procedural

justice, which involves participatory formats in school food management systems, is also not a high priority. There are formats for participation in decision-making at the local and school levels, but they have been judged very laborious. Even when students do participate in designing meals, there is a general sense of a lack of time, recognition, and energy to adequately address the issue of participation. Only small-scale participatory actions, as part of food education programs, have been successful. However, several studies highlight the potential of involving students in meal preparation as part of a learning process about sustainability and empowering them as active agents of change. As a case study in Finland shows, this involvement requires cooperation between stakeholders to develop a “collaborative pedagogy” (Janhonen et al., 2024). Our findings show that a major constraint is the distance between the kitchen and the schools and the lack of direct connection between the cook and the children. This is a barrier found across the different models, although the DPM and CM models are more often associated with on-site kitchens. Thus, up to this point, school kitchens seem to have limited potential to fulfill overall just transition ideals, but major efforts in terms of the distributive justice dimension can be observed.

Table 2 summarizes the contributions of the three management models to the three dimensions of justice.

Table 2. Potentials and challenges regarding just transition dimensions.

	Distributive Justice	Procedural Justice	Recognition Justice
DPM	Transparency regarding the origin of products and direct partnerships with local producers Social pricing to ensure accessibility of school meals for low-income households	Governance linked to representative democracy: Elected members of the municipal council are the ones making decisions	Lack of motivation by municipality employees to propose culturally diversified meals
EPM	Little or no integration of regional value chains with local farmers Accessibility depends on market dynamics and subsidies that not all municipalities can provide	Limited possibilities regarding participation and education	Usually, pork-free meals offered as minimum tender requirements but no intention to go beyond this
CM	Cheaper meals due to parents' voluntary work High potential for direct partnerships with local producers	More room for maneuver regarding participation and active involvement of pupils and parents	Potential for more cultural diversity in meal composition

Source: Authors' own elaboration.

5.2. Strengths and Limits of the Study

This study contributes to the debate on PSFP due to its comparative perspective and the conceptual development of three school food management models.

As the results show, the DPM model offers great potential for sustainability, especially regarding the establishment of stable and direct partnerships with local producers. The CM model has a significant potential for facilitating greater participation from students and parents and for integrating diversity.

However, its potential is limited by the high level of voluntary engagement required from parents, which often consists of a highly gendered division of labor. It is sometimes perceived as a temporary transition phase from a dysfunctional situation to a more stable model. The EPM model has the potential to establish a high organic share in public tenders, but this potential is limited due to the dependency on market dynamics in a low-paid sector and a lack of transparency about the origin of ingredients. Therefore, although the interviewees recognize that the EPM model can be efficient and provide affordable food due to economies of scale, there remains a tendency towards distrust.

Although the results provide an insightful overview of the potentials and challenges of the different management models, we must acknowledge that the results of our study have limited generalizability: The number of interviews carried out was limited, and the different models were only approximately proportionally represented. Nevertheless, the fact that a significant proportion of the interviewees had experience with more than one of the different models enriched their perspective and allowed them to make well-informed comparisons.

5.3. Possible Measures and Policy Implications

Based on the results of our study, several implications can be deduced in terms of policy measures at different levels to improve sustainability outcomes in school catering. These recommendations are partly connected to the organization models but also go beyond them.

In accordance with the literature analysis in which legal constraints were identified as a barrier (Risku-Norja & Løes, 2017), European procurement law can be considered as a factor inhibiting the integration of regional value chains. One policy recommendation would be a reformulation of procurement law so that food is exempt from the free competition directive. Further, the EU should expand the focus from Green Public Procurement to Sustainable Public Procurement as a more holistic approach to include the promotion of the social and economic sustainability criteria in public procurement (Mengual et al., 2024).

At the national level, the comparison between the two countries indicated that national laws setting minimum standards contribute to better outcomes in terms of ecological sustainability. Whereas in most German cases, there is no data available about the actual amount of organic share and food waste, in France, public entities are required to measure their efforts. Germany's strategy of relying on voluntary initiatives has resulted in the emergence of several local projects promoting organic food, but as they depend on temporary project funding, their long-term impact is very limited. In this sense, the EGalim law could serve as an interesting example for setting binding quality standards instead of voluntary guidelines.

At the regional level, the lack of processing infrastructure and networks between farmers, processors, and canteens was perceived by many interviewees as a crucial barrier. This finding aligns with the literature analysis, which also identified this as a key constraint (Braun et al., 2018). Some municipalities, particularly those that are members of the OCN, are already engaged in offering networking events. Another policy recommendation emerging from the interviews is the installation of a digital matching platform by public authorities in order to facilitate more cooperative networking between canteens, regional (organic) farmers, and processors, such as mills or dairies. One example of such a platform is Agrilocal, provided by many French *départements* (Agrilocal, 2024).

At the local level, the findings show the need for binding political guidelines as a key factor for sustainability improvements, particularly regarding the organic share. Several authors also highlight the key role of local policymakers in fostering sustainable change through municipal decisions (Risku-Norja & Løes, 2017). This could be an official resolution by the municipal council that sets specific targets and timelines. Our study shows that municipalities with such a resolution demonstrate the best sustainability outcomes. Further, funding for staff, measures for monitoring the set goals, and local stakeholder involvement are essential to putting the resolution into practice (Quack & Teufel, 2020).

Education is a cross-cutting issue for policy measures. Instead of a single project depending on engaged individuals, sustainable school food education should be part of a comprehensive pedagogical approach in the curricula. Further, in both countries, there is insufficient training for catering professionals on developing more sustainable menu planning. Several municipalities are already engaged in providing coaching programs for integrating more organic, local, and seasonal ingredients. However, a further policy recommendation would be to expand cooking training programs for innovative menu planning with more plant-based varieties to more target groups, especially to cooks in vocational training and catering professionals. These observations align with the key factor identified in the literature analysis (Lopez et al., 2020): the motivation of cooking staff and corresponding efforts to scale up qualification and training programs. However, given the current shortage of skilled labor in the gastronomy and catering sector (Schäfer & Haack, 2023), this key factor is linked to improvements in working conditions and a greater appreciation of cooking as a profession (Hoinle & Klosterkamp, 2023).

5.4. Unanswered Questions and Future Research

Interviews were conducted with individuals in city administration and municipal policy positions. It is important to stress that all our interviewees were school food managers, whether elected municipal council members, executive board members, or staff. Many of them saw themselves as “transition agents,” positioned between the ecological transition policy level, with which they agree, and the grassroots personnel—cooks, kitchen employees, and canteen service staff—who are often described as resistant and yet to be convinced of the benefits of the transition. This underlying social division should not be ignored. Therefore, further research could integrate the perspectives of those working “on the ground,” such as kitchen employees or students. In this regard, another unanswered question is how to strengthen procedural justice by involving students and all other stakeholders of the school food value chain in decision-making processes.

Our study revealed some specific advantages and challenges of urban and rural areas regarding sustainability outcomes. Rural communities have more potential to integrate smallholders into value chains (Kraljevic & Zanasi, 2023), although this potential is not always realized as seen in the interview with DE07. Although we included interviewees from rural and urban areas (see Supplementary Material), future studies could analyze more deeply the specific potentials and challenges of urban and rural municipalities in transitions toward sustainable school food.

An issue often raised by interviewees was the aspect of carbon footprint and plant-based dishes in school meals (see also Graça et al., 2022). Future studies could focus on analyzing measures to promote more plant-based school meals in the context of sustainability transitions in PSFP.

Our study revealed a lack of awareness and lack of research regarding the recognition justice dimension. We suggest future studies to deepen the analysis of the diversity aspects of school food, especially in current times of increasing prejudices against migration. The issue of diversity has substantial potential for fostering sustainable school meals. School canteens could integrate knowledge about diverse food habits and recipes to develop innovative menu planning that enhances both procedural and recognition justice, whilst including more sustainable and plant-based dishes. This potential is still underexplored in current research and practice (Hoinle & Klosterkamp, 2023).

6. Conclusion

Our study aimed to explore the potentials and challenges in three school food management models and to identify key policy measures to promote just and sustainable school food procurement. Our analysis showed that the DPM model has a greater scope for improving sustainability outcomes, particularly regarding increasing the organic share, implementing food waste reduction measures, and integrating seasonal, fresh food through direct partnerships with local food providers. Additionally, the DPM model demonstrated greater potential for participation in terms of procedural justice. EPM models are highly dependent on market dynamics and only a few municipalities, with very engaged staff in administration, achieved good outcomes in terms of the organic share. CM models have significant potential for pedagogical approaches involving pupils and integrating diversity in terms of “recognition justice.” Yet, they are dependent on parents’ voluntary work. The comparison between the two countries indicated that national guidelines defining quality standards are more effective than voluntary incentives. Thus, our policy recommendations highlight, on the one hand, the importance of having concrete guidelines at the national level—or at least at the local level with a municipal council resolution—and, on the other hand, the role of educational approaches in making sustainable food an important issue in school curricula and professional training for cooks.

Acknowledgments

We would like to thank all the interviewees for their time and interest in contributing their knowledge and insights to our study. In France, we would like to acknowledge Gilles Maréchal for connecting the interviewees with the researcher and Nàdege Noisette for her valuable feedback and exchange during the elaboration of this article. Also, we would like to thank Alison Butler and Haley Swanger for their feedback and careful proofreading. Publishing fees supported by the Funding Programme Open Access Publishing of the University of Hohenheim.

Funding

This work was partly realized within the ATTER (Agroecological Transitions for TERritorial food systems) project. This project has received funding from the European Union’s Horizon 2020 research and innovation program under the Marie Skłodowska-Curie grant agreement No. 101007755.

Conflict of Interests

The authors declare no conflict of interests.

Supplementary Material

Supplementary material for this article is available online in the format provided by the authors (unedited).

References

- Agrilocal. (2024). Agrilocal. <https://www.agrilocal.fr>
- Andhov, M., Mikulic, S., & Nielsen, L. (2024). Transforming food systems: The role of public procurement. In M. Stein, M. Mariani, R. Caranta, & Y. Polychronakis (Eds.), *Sustainable food procurement: Legal, social and organisational challenges* (pp. 203–215). Routledge.
- Association des Maires de France. (2024). *Enquête 2024. La restauration scolaire: Des communes volontaires malgré les difficultés persistantes*. <https://medias.amf.asso.fr/docs/DOCUMENTS/00b4dae337f50928d8b1ce871968f38b.pdf>
- Baldy, J. (2019). Framing a sustainable local food system—How smaller cities in Southern Germany are facing a new policy issue. *Sustainability*, 11(6), Article 1712. <https://doi.org/10.3390/su11061712>
- Böhm, M., Ebert, W., Erhart, A., Linck, J., Meier, M., Schön, T., & Zeiss, C. (2025). *Mehr Bio in Kommunen—Strategien und Konzepte zur erfolgreichen Einführung zum Management von Bio-Lebensmitteln in der Gemeinschafts-Gastronomie von Kommunen*. Verein zur Förderung der Biostädte. <https://www.biostaedte.de/aktuelles/14-neuer-leitfaden-mehr-bio-in-kommunen>
- Braun, C., Rombach, M., Häring, A., & Bitsch, V. (2018). A local gap in sustainable food procurement: Organic vegetables in Berlin's school meals. *Sustainability*, 10(11), Article 4245. <https://doi.org/10.3390/su10114245>
- Crippa, M., Solazzo, E., Guizzardi, D., Monforti-Ferrario, F., Tubiello, F. N., & Leip, A. (2021). Food systems are responsible for a third of global anthropogenic GHG emissions. *Nature Food*, 2, 198–209.
- Esnault, M. (2023). *Approvisionner la restauration scolaire dans les espaces non centraux: L'exemple de la Normandie. Contribution à une géographie sociale de l'alimentation* [Unpublished doctoral dissertation]. Université de Caen Normandie. <https://theses.hal.science/tel-04446165>
- EU. (2014). *Directive of the European Parliament and of the Council 2014/24*. <https://eur-lex.europa.eu/eli/dir/2014/24/oj/eng>
- Filippini, R., De Noni, I., Corsi, S., Spigarolo, R., & Bocchi, S. (2018). Sustainable school food procurement: What factors do affect the increase of organic food? *Food Policy*, 76, 109–119.
- Fischer, L., & Newig, J. (2016). Importance of actors and agency in sustainability transitions: A systematic exploration of the literature. *Sustainability*, 8(5), Article 476. <https://doi.org/10.3390/su8050476>
- Geels, F. (2019). Socio-technical transitions to sustainability: A review of criticisms and elaborations of the multi-level perspective. *Current Opinion in Environmental Sustainability*, 39, 187–201.
- German Federal Ministry of Food and Agriculture. (2024). *Gutes Essen für Deutschland. Ernährungsstrategie der Bundesregierung*. <https://www.bmel.de/DE/themen/ernaehrung/ernaehrungsstrategie/ernaehrungsstrategie.html>
- Graça, J., Roque, L., Guedes, D., Campos, L., Truninger, M., Godinho, C., & Vinnari, M. (2022). Enabling sustainable food transitions in schools: A systemic approach. *British Food Journal*, 124(13), 332–339.
- Greiner, A., & Ebert, W. (2024). *Neue Zahlen aus den Biostädten*. Ökolandbau. <https://www.oekolandbau.de/bio-fuer-die-region/bio-staedte/neue-zahlen-aus-den-biostaedten>
- Guillaume, M., Pujos, L., & Magrini, M. (2022). Micro-level sustainability transition pathways of institutional food services in France. *Frontiers in Sustainable Food Systems*, 6, Article 943020. <https://doi.org/10.3389/fsufs.2022.943020>
- Hoinle, B., & Klosterkamp, S. (2023). Food justice in public-catering places: Mapping social-ecological inequalities in the urban food systems. *Frontiers in Sustainable Food Systems*, 7, Article 1085494. <https://doi.org/10.3389/fsufs.2023.1085494>
- Janhonen, K., Manninen, M., & Hjalmskog, K. (2024). Sustainable food education in Finnish schools through

- collaborative pedagogy. In J. Gaddis & S. Robert (Eds.), *Transforming school food policies around the world* (pp. 77–93). MIT Press.
- Jansen, K. (2019). *Essen an Schulen zwischen Anspruch und Wirklichkeit. Erwartungen an Schulverpflegung in Anbetracht von Erfahrungen aus der Praxis*. Beltz Juventa.
- Kaljonen, M., Kortetmäki, T., Tribaldos, T., Huttunen, S., Karttunen, K., Maluf, R., Niemi, J., Saarinen, M., Salminen, J., Vaalavuo, M., & Valsta, L. (2021). Justice in transitions. Widening considerations of justice in dietary transition. *Environmental Innovation and Societal Transition*, 40, 474–485.
- Kovacs, V. A., Messing, S., Sandu, P., Nardone, P., Pizzi, E., Hassapidou, M., Brukalo, K., Tecklenburg, E., & Abu-Omar, K. (2020). Improving the food environment in kindergartens and schools: An overview of policies and policy opportunities in Europe. *Food Policy*, 96, Article 101849. <https://doi.org/10.1016/j.foodpol.2020.101848>
- Kraljevic, B., & Zanasi, C. (2023). Drivers affecting the relation between biodistricts and school meals initiatives: Evidence from the Cilento biodistrict. *Frontiers in Sustainable Food Systems*, 7, Article 1235871. <https://doi.org/10.3389/fsufs.2023.1235871>
- Kuharic, K., & Zander, A. (2025). Unser cleveres Esszimmer – Initiative zur Optimierung der Verpflegungssituation in Schulen. Beispiel eines Förderprogramms für Schulen in Hessen. *Ernährungsumschau*, 72(2), 126–133.
- Kujala, S., Hakala, O., & Viitaharju, L. (2022). Understanding regional variation in the use of local food in public catering. *British Journal for Food Studies*, 124(10), 3323–3337.
- Lang, D., Wiek, A., Bergmann, M., Stauffacher, M., Martens, P., Moll, P., Swilling, M., & Thomas, C. (2012). Transdisciplinary research in sustainability science: Practice, principles, and challenges. *Sustainability Science*, 7, 25–43.
- Lassen, A., Thorsen, A., & Trolle, E. (2023). Current practices and opportunities for more sustainable public food procurement: A qualitative study among Danish municipalities and regions. *Foods*, 12(10), Article 1975. <https://doi.org/10.3390/foods12101975>
- Loorbach, D., Frantzeskaki, N., & Avelino, F. (2017). Sustainability transitions research: Transforming science and practice for societal change. *Annual Review of Environment and Resources*, 42, 599–626.
- Lopez, V., Teufel, J., & Gensch, C. (2020). How a transformation toward sustainable community catering can succeed. *Sustainability*, 12, Article 101. <https://doi.org/10.3390/su12010101>
- Magrini, M., Fernandez-Inigo, H., Doré, A., & Pauly, O. (2021). How institutional food services can contribute to sustainable agrifood systems? Investigating legume-serving, legume-cooking and legume-sourcing through France in 2019. *Review of Agricultural, Food and Environmental Studies*, 102, 297–318.
- Martínez-Alier, J., Anguelovski, I., Bond, P., Del Bene, D., Demaria, F., Gerber, J.F., Greyl, L., Haas, W., Healy, H., Marín-Burgos, V., Ojo, G., Porto, M., Rijnhout, L., Rodríguez-Labajos, B., Spangenberg, J., Temper, L., Warlenius, R., & Yáñez, I. (2014). Between activism and science: Grassroots concepts for sustainability coined by environmental justice organizations. *Journal of Political Ecology*, 21(1), 19–60.
- Mengual, S., Valenzano, A., Sinkko, T., Garcia Herrero, L., Casonato, C., Listorti, G., & Sala, S. (2024). *Sustainable public procurement: Current status and environmental impacts*. Publications Office of the European Union. <https://data.europa.eu/doi/10.2760/06145>
- Milan Urban Food Policy Pact, 2015. <https://www.milanurbanfoodpolicypact.org/wp-content/uploads/2020/12/Milan-Urban-Food-Policy-Pact-EN.pdf>
- Ministère de l'Agriculture et de la Souveraineté Alimentaire. (2023). *Bilan statistique annuel 2023 de l'application des objectifs d'approvisionnement fixés à la restauration collective*. <https://shorturl.at/SkPJq>
- Molin, E., Martin, M., & Björklund, A. (2021). Addressing sustainability within public procurement of

- food: A systematic literature review. *Sustainability*, 13(23), Article 13395. <https://doi.org/10.3390/su132313395>
- Nordgård Vik, F. (2022). School meals in Norway—Current status and a way forward? In D. Ruge, I. Torres, & D. Powell (Eds.), *School food, equity and social justice. Critical reflections and perspectives* (pp. 111–122). Routledge.
- Pagliarino, E., Santanera, E., & Falavigna, G. (2021). Opportunities for and limits to cooperation between school and families in sustainable public food procurement. *Sustainability*, 13(16), Article 8808. <https://doi.org/10.3390/su13168808>
- Perignon, M., Lepiller, O., Intoppa, B., Valette, E., Roudelle, O., & Wood, A. (2023). The role of school canteens in building more sustainable food systems. The impact pathways of the “Ma Cantine Autrement” programme in Montpellier. In E. Valette, A. Blay-Palmer, B. Intoppa, A. Di Battista, O. Roudelle, & G. Chaboud (Eds.), *Evaluating sustainable food system innovations. A global toolkit for cities* (pp. 77–100). Routledge.
- Quack, D., & Teufel, J. (2020). *Politikempfehlungen für eine nachhaltige Transformation der Gemeinschaftsverpflegung*. Öko-Institut. <https://www.oeko.de/fileadmin/oekodoc/WP-Politikempfehlungen-GV.pdf>
- Risku-Norja, H., & Løes, A. (2017). Organic food in food policy and in public catering: Lessons learned from Finland. *Organic Agriculture*, 7, 111–124.
- Sanz Sanz, E., Cardona, A., & Napoléone, C. (2022). Motivations of public officials as drivers of transition to sustainable school food provisioning: Insights from Avignon, France. *Journal of Agricultural and Environmental Ethics*, 35(6), 1–27.
- Schäfer, A., & Haack, M. (2023). Overcoming the efficiency paradigm—The challenges of introducing local organic beef in canteens. *Frontiers in Sustainable Food Systems*, 7, Article 1152185. <https://doi.org/10.3389/fsufs.2023.1152185>
- Scientific Advisory Board on Agricultural Policy, Food and Consumer Health Protection. (2023). *Ernährungsarmut unter Pandemiebedingungen*. <https://www.bmel.de/DE/ministerium/organisation/beiraete/agr-veroeffentlichungen.html>
- Smith, J., Andersson, G., Gourlay, R., Karner, S., Egberg Mikkelsen, B., Sonnino, R., & Barling, D. (2015). Balancing competing policy demands: The case of sustainable public sector food procurement. *Journal of Cleaner Production*, 112, 249–256.
- Speck, M., Wagner, L., Buchborn, F., Steinmeier, F., Friedrich, S., & Langen, N. (2022). How public catering accelerates sustainability: A German case study. *Sustainability Science*, 17, 2287–2299.
- Stein, M., Hunter, D., Swensson, L., Schneider, S., & Tartanac, F. (2022). Public food procurement: A transformative instrument for sustainable food systems. *Sustainability*, 14(11), Article 6766. <https://doi.org/10.3390/su14116766>
- Stein, M., Mariani, M., Caranta, R., & Polychronakis, Y. (2024). *Sustainable food procurement: Legal, social and organisational challenges*. Routledge.
- Swilling, M. (2020). *The age of sustainability. Just transitions in a complex world*. Routledge.
- Tribaldos, T., & Kortetmäki, T. (2022). Just transition principles and criteria for food systems and beyond. *Environmental Innovation and Societal Transition*, 43, 244–256.
- Tschersich, J., & Kok, K. (2022). Deepening democracy for the governance toward just transitions in agri-food systems. *Environmental Innovation and Societal Transition*, 43, 358–374.

About the Authors



Birgit Hoinle is a postdoc researcher at the Department of Societal Transition and Agriculture at the University of Hohenheim, Germany. She holds a PhD in geography from the University of Hamburg. Her current research focuses on food justice, urban food policies, and school food. She is an active member of the Food Policy Council Tübingen.



Jocelyn Parot is a researcher at the Justus Liebig University in Giessen and a network coordinator for the international network URGENCI. His areas of expertise are in the sociology of sustainable food systems and short supply chains. He is also serving as an elected member of a municipal council, in charge of school food procurement.

Levers for Sustainable Food System Transformation: How to Foster Biodiversity and Organic and Local Food Through Public Catering

Clara Bückart-Neufeld ^{1,2} , Franziska Bürker ³ , and Birgit Hoinle ¹ 

¹ Department of Societal Transition and Agriculture, University of Hohenheim, Germany

² Nürtingen-Geislingen University, Germany

³ Institute for Technology Assessment and Systems Analysis, Karlsruhe Institute of Technology, Germany

Correspondence: Clara Bückart-Neufeld (bueckart-neufeld@hfwu.de)

Submitted: 22 November 2024 **Accepted:** 25 April 2025 **Published:** 30 July 2025

Issue: This article is part of the issue “Perspectives on Food in the Sustainable City” edited by Birgit Hoinle (University of Hohenheim), Alena Birnbaum (University of Kassel), and Petra Lütke (University of Münster), fully open access at <https://doi.org/10.17645/up.i395>

Abstract

Biodiversity loss is one of the most urgent sustainability challenges and is closely linked to our food system. How food consumption is organized, especially in urban areas, will be crucial in shaping biodiversity-friendly and sustainable food systems in the coming years. In this context, the integration of local and organic products into public food procurement can be a driver of increased biodiversity in our landscapes and greater dietary diversity on our plates. The purpose of this article is to explore the extent to which public food procurement can drive this shift towards a sustainable and biodiversity-friendly food system. We conducted a systematic literature review and qualitative content analysis of 26 articles published in the European context that focused on sustainability in public procurement in order to identify key barriers and drivers affecting the share of biodiversity-friendly, organic, and local products in public catering. After developing a conceptual framework based on the leverage points model developed by Meadows (1999), we contextualized the identified barriers and drivers in this model and sorted them into shallow and deep levers for increasing biodiversity. Our results indicate that key drivers for promoting biodiversity-friendly, organic, and local food include political will, the involvement of all stakeholders along the value chain, and the need to initiate profound changes in actors' values, the transition goals, and the rules of the system.

Keywords

biodiversity; food system; local food; organic farming; organic food; public catering; sustainability; value chains

1. Introduction

When we think of our food system and today's global sustainability challenges, we immediately associate the effects of our food production with climate change, soil degradation, and water pollution (Aleksejeva, 2022). However, the food on our plates also impacts biodiversity in agricultural landscapes, as agri-food systems contribute significantly to biodiversity loss (Andhov et al., 2024; Campbell et al., 2017). Campbell et al. (2017) state that agriculture is responsible for 80% of the decline in biodiversity. Here, there are influences on biodiversity loss such as farm management in the form of intensive agriculture, monocultures, pesticides, or excessive fertilisation. Additionally, landscape or habitat diversity can also be affected by habitat destruction, such as deforestation. Positive impacts can be enhanced through agroforestry, mixed cropping, or intercropping approaches (Monetti et al., 2021).

Such beneficial practices can be found in organic agriculture. Organic agriculture is increasingly promoted as a strategy for mitigating biodiversity loss in our food systems, due to its more sustainable farming methods and, therefore, lower environmental impacts (Sanders & Heß, 2019; Schleiffer et al., 2022; Seufert & Ramankutty, 2017). According to a review (Seufert & Ramankutty, 2017), organic agriculture, in accordance with established organic certification guidelines, such as the avoidance of synthetic fertilizers and pesticides, has been found to have a beneficial impact on local biodiversity. Seufert and Ramankutty (2017) conclude that, despite the common uncertainties about the benefits of current organic practices and the context-dependency of the performance of organic agriculture, organic farming has positive effects, particularly "for plant and pollinator biodiversity in arable systems and simple landscapes" (Seufert & Ramankutty, 2017, p. 3). This is also confirmed by a meta-analysis, which shows that organic farming in general results in a greater diversity of flora and fauna on cultivated land (Sanders & Heß, 2019). Consequently, organic farming plays a pivotal role in biodiversity conservation. In order to promote a more sustainable food system, counteract climate change, protect the environment, and preserve biodiversity, the EU is supporting organic farming with its Organic Action Plan, which aims to convert 25% of agricultural land in Europe to organic farming by 2030 (European Commission, 2021).

The focus of this article will be on organic farming, where we see the promotion of biodiversity in the context of local food systems as an integral aspect. In contrast to the organic standards, there is no definition of "local" food (Hanke & Wunder, 2023; Joannides, 2012). Therefore, the following aspects can be distinguished in order to conceptualize local food. One aspect is geography, such as being grown within 100 miles, or it may be the administrative boundaries of a region or state. Another is the transparency of the number of involved stakeholders between the final consumer and the producer through short food supply chains. It can also be the connection to the place or person who grew or produced the food (Joannides, 2012). The EU registers more than 3,400 products as "geographical indications." These identify a product as "originating in the territory of a particular country, region or locality where its quality, reputation or other characteristic is linked to its geographical origin" (European Commission, 2017, p. 9). Thus, the category "local" provides no quality criteria. However, it is often associated with small-scale and family farming. We argue that the promotion of short food supply chains can contribute to positive biodiversity outcomes in local landscapes. In contrast, globalized value chains in the food system are cited as one of the causes of disappearing biodiversity in agricultural landscapes (Teufel et al., 2020). Since the 1970s, agricultural production has increasingly focused on a limited number of species and varieties, selected to meet the demands of a global market with no connection to the local region. As a result, in terms of ecotypes and varieties, 75% of the agricultural crops present at the beginning of the

20th century have since been lost (Barbeito et al., 2020). Furthermore, due to oligopolies within the global food system, global competitive pressure and the design of the EU's Common Agricultural Policy, intensive, large-scale farming practices have become established. This intensive use of the landscape increases the loss of biodiversity by eliminating differentiated landscapes. The regionalization of food production, through public catering, could help to strengthen and promote extensive land use and the use of local varieties, especially by small farms through new sales channels (Hanke & Wunder, 2023). A literature review by Chaves et al. (2023) indicates that school feeding programs which promote local food supplies from smallholder farmers result in superior health outcomes due to the sourcing of fresher food, as well as more sustainable climate impacts due to shorter transport distances and lower carbon emissions (Chaves et al., 2023). Therefore, by increasing demand for local and organic products, especially regionally specific varieties, crop diversity is increased, which contributes to higher local biodiversity (Hanke & Wunder, 2023).

In this study, we focus on public catering as a way to promote biodiversity-friendly, organic, and local products through public procurement. Public catering, i.e., food in public institutions, is seen as a lever for an agroecological transition of the food system. Given that consumer demand for organic products is not yet sufficient to persuade farmers to convert on a larger scale, several municipal governments are focusing on public catering as a tool to increase demand for organic products (Daugbjerg, 2023; Lindström et al., 2022; Schleiffer et al., 2022). Public catering is here understood as a subcategory of out-of-home catering. Whereas out-of-home catering comprises also individual gastronomy (e.g., restaurants and food trucks), public catering is reduced to the food in public entities, such as the education sector (day-care centres and school canteens), the care and welfare sector (hospitals, rehabilitation facilities, and elderly homes) and the business catering sector (company canteens; Pfefferle et al., 2021). In this article, we will concentrate on the sub-category of public catering in education, care, and welfare entities.

The high purchasing power of public contracts, which represent approximately 12% of global GDP, enables local governments to create demand and influence environmental and social impacts through their procurement choices (Andhov et al., 2024; Cruz et al., 2023; Molin et al., 2024). With the EU's Farm to Fork Strategy and Green Public Procurement policy, the EU has created a regulatory framework that allows cities and municipalities to adopt sustainable procurement practices with a lower environmental impact (Commission recommendation of 15 December 2021, 2021). Thus, public catering policy is strongly influenced by urban authorities, which play a central role in the promotion of sustainable nutrition (Schleiffer et al., 2022). Given the purchasing power associated with public catering, cities can facilitate or accelerate the shift towards biodiversity-enhancing diets by providing a significant market for organic food (Cruz et al., 2023; Scheerer et al., 2024; Spyridon & Mikkelsen, 2018). There is a remarkable increase in the number of cities in Europe that have established targets regarding the use of organic foods in public catering facilities (Vienna, Copenhagen, and Berlin; Schleiffer et al., 2022). Nevertheless, the growth of organic food use in public catering remains relatively slow (Scheerer et al., 2024).

Previous studies have explored the potential of public catering as a lever for transforming the food system toward sustainability. Whereas some studies focus on food waste or vegetarian meals, many studies concentrate on integrating organic products into canteen kitchens or on promoting local value chains, with the objective of enhancing the sustainability of local economies (Braun et al., 2018; Filippini et al., 2018; Risku-Norja & Løes, 2017). Only a few studies focus on biodiversity in out-of-home catering regarding menu composition and eating habits (Crenna et al., 2019; Heinz et al., 2023; Monetti et al., 2021; Speck et al.,

2022). Our approach builds on linking the existing research on local and organic food in public catering with the issue of biodiversity. Our argument is that public catering can be used as a lever to strengthen local organic farming and thereby promote local biodiversity, addressing one of the major challenges of current agricultural production systems.

Therefore the research questions we follow in this article are: What are the barriers and drivers to fostering biodiversity-friendly, organic, and local food through public catering? What are the effective levers for a food system transformation toward sustainability and biodiversity?

Based on a systemic literature review, the objective of this study is to identify the key drivers and barriers influencing the uptake of biodiversity, organic, and local food in public catering. As a conceptual framework, we use a food system lens and the leverage points (LPs) concept developed by Meadows (1999) and Abson et al. (2017) to explore the potential points of intervention that could significantly increase the share of biodiversity-friendly, organic, and local products in the catering sector. We aim to provide strategies for local authorities to facilitate the integration of more organic and local food into public catering, thereby contributing to the conservation of biodiversity within the agri-food system.

2. Conceptual Framework: Biodiversity and LPs

This section presents an understanding of biodiversity and contextualizes it within the framework of food systems and public catering. It briefly outlines the LPs model, as proposed by Meadows (1999) and Abson et al. (2017), as a tool for analyzing potential intervention points for change within the public catering food system model.

2.1. Contextualizing Biodiversity in the Framework of Public Catering and the Food System

2.1.1. Biodiversity

In general, biodiversity is classified into three main categories: biodiversity of species, biodiversity of genetic resources, and biodiversity of ecosystems. Swingland (2013) offers the following definition of biodiversity: “Biodiversity/biological diversity: Species, genetic, and ecosystem diversity in an area, sometimes including associated abiotic components such as landscape features, drainage systems, and climate” (Swingland, 2013, p. 399). Species diversity describes the number of different biological species, which can be classified as animals, plants, or fungi. Furthermore, the concept of species diversity can be extended to encompass the diversity of varieties or breeds, particularly in the context of agrobiodiversity. Genetic diversity can be defined as the amount of genetic information that exists among all organisms. Ecosystem diversity refers to the number of distinct habitats, including forests, lakes, and agricultural areas. Various aspects of production systems can impact biodiversity at different levels. For example, studies examine how seed selection affects genetic diversity (Kliem & Sievers-Glotzbach, 2022) or how diversification through the use of diverse plant species influences species diversity (Azam-Ali et al., 2024; De Falco et al., 2022; Mattas et al., 2023; Zhang & Dannenberg, 2022). The type of cultivation also affects ecosystem diversity, for example, intercropping with a maize-bean mixture has positive effects (Hüber et al., 2022).

Biosphere integrity is one of the nine planetary boundaries that has already been reached, with the global decline in genetic diversity representing a significant transgression (Richardson et al., 2023). For several decades, numerous policy documents, including the Rio 1992 Convention on Biological Diversity, the EU Biodiversity Strategy 2020, and the UN Global Biodiversity Framework of Montreal 2022, have emphasized the significance of conserving global biodiversity, highlighting its critical status and the necessity for urgent action. The *Global Assessment Report on Biodiversity and Ecosystem Services* (Brondizio et al., 2020), the annual *Global Biodiversity Outlook*, and several studies have documented a global decline in biodiversity (Mantyka-Pringle et al., 2015; Newbold et al., 2015; Rounsevell et al., 2020; Urban, 2015). Given the variability of estimates of the extinction rate across studies and models, Urban's (2015) meta-study serves as a reliable reference point. Utilising a 95% confidence interval (CI) across all studies, Urban (2015) determined a value of 7.5% for the extinction rate, which increases exponentially with the gradient of global warming. In addition, an examination of the landscape species-area relationship model, as employed by Chaudhary and Kastner (2016), determined that 83% of total species loss can be attributed to the agricultural use of land for domestic consumption, with the remaining 17% resulting from export production (Chaudhary & Kastner, 2016).

2.1.2. Agrobiodiversity

Agrobiodiversity is regarded as a critical subset of biodiversity (Divéky-Ertsey et al., 2022). According to the Food and Agriculture Organization of the United Nations (2004) definition, agrobiodiversity encompasses crop varieties, livestock species, and non-harvested species that support food provision, such as pollinators. This definition highlights the importance of diverse local food production systems, which are currently facing challenges. This, in turn, raises concerns about the loss of associated local knowledge, cultural practices, and skills among food producers, particularly small-scale farmers. In the context of the food system, the concept of agrobiodiversity emphasizes the need to preserve local crop varieties, such as different bean varieties or heirloom seeds, developed over centuries by local farmers. In line with the recommendations set forth by the planetary health diet, these legume varieties, rich in plant-based proteins, have the potential to contribute to a more climate-friendly diet (Willett et al., 2019). Although the aspect of preserving traditional varieties plays a huge role in this study, we use the more general term biodiversity for the systemic literature review as it provides a broader scope for analysis.

2.1.3. Biodiversity in the Context of Public Catering

Currently, there are no labels to help consumers identify products that are biodiversity-friendly (Stampa & Zander, 2022). Labels such as Planet Score have begun to address the issue of biodiversity, but they are still in the process of being implemented (Commission recommendation of 15 December 2021, 2021). However, some studies analyse the biodiversity impact of food specifically in the context of out-of-home catering. Monetti et al. (2021) developed an assessment tool to measure the impact of individual nutrition on biodiversity in out-of-home catering settings. The indicator set can be used to link biodiversity also to food consumption in public catering. For instance, species diversity is measured in terms of key and crop species richness, e.g., the diversity of crop species per farm or area and the proportion of high biodiversity areas in the total farmland. Genetic biodiversity is measured using the number and proportion of cultivars, varieties, and production from rare, traditional, locally adapted and other genetic line varieties, as well as the red-list crop varieties. Landscape/habitat diversity is measured using indicators such as landscape complexity, the

number of land use types and heterogeneity of land use types. Farm management is measured using indicators such as land use intensity, organic standards, biodiversity practices, and on-farm agrobiodiversity, e.g., agroforestry, mixed-farming, intercropping, infrastructure, and agrobiodiversity conservation (Monetti et al., 2021). Certain production methods and product groups have different potential to foster or endanger biodiversity. In the context of out-of-home catering, recent studies have explored the influence of certain food groups on biodiversity. Crenna et al. (2019) analyze the environmental impact of 32 representative food products in the EU. Assessing biodiversity impacts is very complex, but they list the foods with the highest impacts in the following order: beef (25%), pork (19%), poultry (8%), cheese (7%), sunflower oil (4%), butter (4%), milk (4%), and eggs (4%), as well as 24 other products (<4% each with 25%; Crenna et al., 2019). The findings for a more plant-based nutrition to support biodiversity through eating habits are supported by a recent study addressing the impact of food on biodiversity at the menu level in Germany (Heinz et al., 2023). The article of Heinz et al. (2023) describes the development of an assessment framework based on a systematic literature review and expert interviews. An indicator-based approach focusing on land use was developed and validated using recipes from out-of-home catering facilities (Heinz et al., 2023). The results show that meat-based meals are not recommended from a biodiversity perspective, whereas vegetarian meals have better outcomes. Vegan meals were mostly recommended (Heinz et al., 2023).

These studies provide first insights into how the promotion of biodiversity can be integrated into public catering and offer indicators for biodiversity-friendly products. What remains open is the question of what factors promote or hinder the use of biodiversity-friendly products in public kitchens. Following up on those studies we are investigating this question in this article. Considering the aforementioned biodiversity framework, we argue that biodiversity is integrated into the public catering system through the utilization of diverse food varieties in public kitchens. Given the interconnection between organic farming methods and local short food supply chains as a way to promote biodiversity in local landscapes, our approach integrates the existing literature on organic and local food in public catering with biodiversity aspects as pathways to transforming the food system toward sustainability.

2.1.4. Actors and Interdependencies Within the Food System

Our systemic literature analysis takes a systemic approach to the food system and public catering. A schematic overview of the elements and actors of the public catering food system under consideration is given in Figure 1 as an orientation for the following analysis.

The food system encompasses the interaction of all activities and actors that influence the production, processing, distribution, consumption, and disposal of food (Andhov et al., 2024; Nguyen, 2018; von Braun et al., 2023). On the level of local stakeholders, this interaction is characterized by three main elements: food supply chains (from production systems to retail and markets), food environments (food availability, economic access, advertising and information, food quality, and safety), and consumer behaviour (cultures that shape dietary choices; High Level Panel of Experts on Food Security and Nutrition, 2017). In the context of public catering, relevant actors in the food system include: farmers, who produce food; distributors, who distribute food through suppliers and logistics companies; processors, who produce pre-cut products tailored to the needs of public catering; public purchasers, who procure food for public institutions; and public kitchens, which prepare meals for their guests, mostly students, patients, or employees of public institutions. The food system and its elements do not exist in isolation, but are integrated into other key

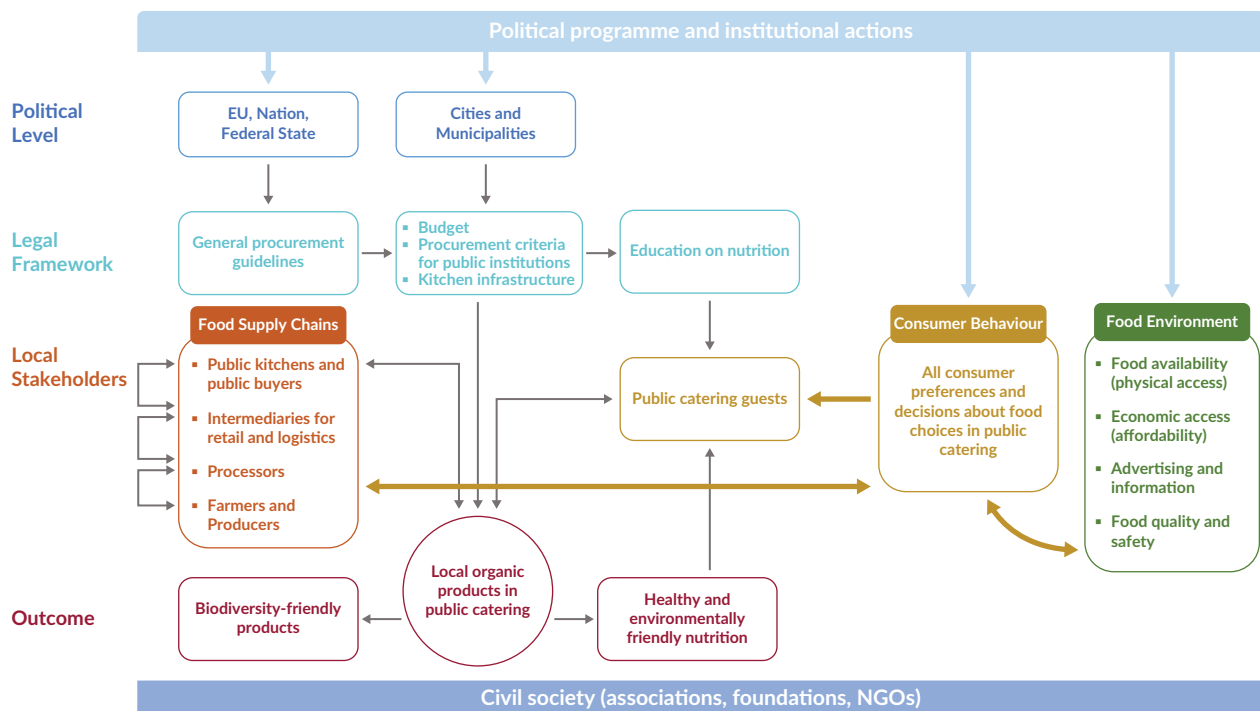


Figure 1. Schematic overview of the public catering food system. Source: Adapted from Flörke et al. (2022) and High Level Panel of Experts on Food Security and Nutrition (2017).

systems that influence each other, such as political, economic, health, and environmental systems (Andhov et al., 2024; Nguyen, 2018). On the political level, policymakers shape the legal framework with guidelines and standards. All of these actors contribute to the functioning of public catering and therefore influence the procedures and processes of the system (Molin et al., 2024). Therefore, each stakeholder group is relevant and must be taken into account in the implementation of measures to address the increase of biodiversity in public catering.

2.2. LPs

In this article, we adopt an “LPs perspective” to identify effective levers to foster biodiversity through the transition to organic and local food in public catering. The 12 LPs, which are based on Meadows’ (1999) extensive research on human-environment systems, provide a conceptual framework for the implementation of effective interventions within a system. Meadows defines LP as “a place in the system where a small change could lead to a large shift in behavior” (2008, p. 145). In her hierarchy of LP (see Table 1), Meadows (1999) distinguished between “shallow” LPs, where interventions are relatively easy to implement but have limited transformative potential, and “deep” LPs, where interventions are more challenging but have significant potential for transformative change. Abson et al. (2017) developed a simplified approach, by synthesizing Meadows’ 12 LPs into four system categories applicable to transformation research: parameters, feedbacks, design, and intent. Each of the four categories encompasses three of Meadows’ 12 LPs (see Figure 2). Abson et al. (2017, p. 32) also categorize the four groups based on the depth of their impact, following the distinction between shallow and deep LPs:

- Parameters include “the relatively mechanistic characteristics typically targeted by policy makers,” such as mechanical characteristics (e.g., taxes and standards), as well as physical structure (e.g., buffers and flows).
- Feedbacks focus on “the interactions between elements within a system of interest that drive internal dynamics,” such as reinforcing (positive) or dampening (negative) feedback loops.
- Design refers to “the social structures and institutions that manage feedbacks and parameters,” including information flows, rules, and power characteristics.
- Intent refers to “the underpinning values, goals, and world views of actors that shape the emergent direction to which a system is oriented,” such as the mindsets from which goals emerge.

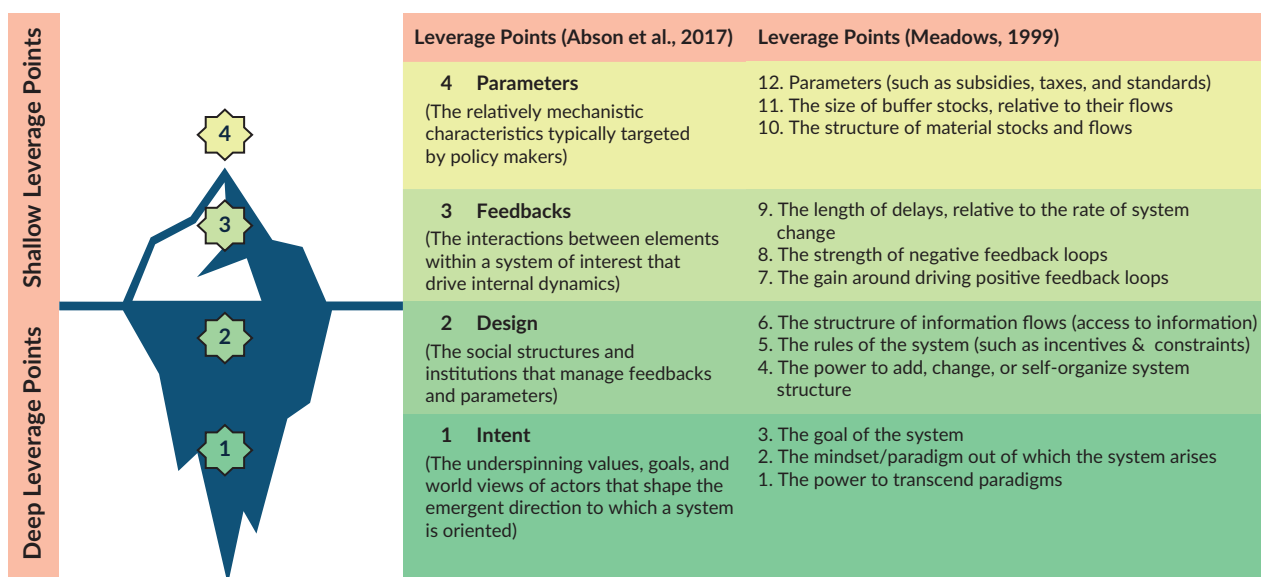


Figure 2. LPs for a transformation towards a sustainable and biodiversity-friendly food system. Source: Adapted from Meadows (1999) and Abson et al. (2017).

This model provides a general overview of LPs for change in social systems, in this case, the food system. In our discussion, we will apply this model to our analysis to identify differences in the effectiveness of LPs and develop strategies to overcome barriers identified in the literature review. It not only identifies the differences between strong and weak levers, but also suggests strategies that researchers and policymakers can use to build on the results.

3. Methodology

Our approach is based on a systemic literature review with two strands integrating the existing broad literature body on organic and local food in public catering with the more recent and very rare studies on biodiversity in public catering. Accordingly, one strand analyses the broad literature on organic, local food in public catering in order to identify key drivers and barriers to sustainable transitions in public catering. The second strand aims to deepen the analysis of the specific challenges of promoting biodiversity on the plates in public canteens.

Our approach aimed to find the most relevant scientific articles published in the past 10 years in the European context. For the bibliographic search, we focused on the well-established database SCOPUS as it provides a

large number of interdisciplinary articles. The search was then refined using the Agricola, AgEcon, and AGRIS databases, which focus on agriculture, nutrition, and food production. We distinguished two strings one with organic and local and one with a deeper focus on biodiversity.

The literature search strings were divided into thematic blocks, including terms identifying public catering, biodiversity, organic products, local products, and value chains (see Table 1). We conducted multiple searches using different combinations of keywords until a total of 16 searches yielded no new articles. The literature review was carried out from March to July 2024. We restricted our search to journal articles written in English and published in the last 10 years (2014–2024) within the EU, where the same legal framework applies. The articles were reviewed based on titles, keywords, and abstracts. Only articles specifically addressing biodiversity, organic food, and local food in public-sector catering were selected, while articles covering restaurants and company canteens (business sector) were excluded.

Table 1. Keywords used in the systematic literature search.

Themes	Keywords Search Process 1	Keywords Search Process 2
Biodiversity	—	AND biodiversity
Organic products	AND [organic food OR sustainable food OR increase of organic food]	—
Local products	AND [local OR local food OR localized food systems OR local sourcing]	—
Value chains	AND [short supply chain OR food supply chain OR regional networks]	AND [supply chain OR value chain]
Public catering	AND [public procurement OR public catering OR school catering OR school catering services OR institutional kitchens OR public school food procurement OR food service OR communal catering]	AND [public procurement OR public catering OR school catering OR school catering services OR institutional kitchens OR public school food procurement OR food service OR communal catering]
Promotional factors	—	OR success
Inhibitory factors	—	OR barrier

The search string 1, with a focus on organic and local food, yielded a total of 1,592 articles. After removing duplicates, two researchers screened the full text of the remaining 76 articles to assess the relevance of the literature. After full-text screening and adding a further four articles through backward searching, 25 articles were deemed eligible.

The search string 2, with a focus on biodiversity, was conducted to assess the current relevance of biodiversity in public procurement literature. For this, a systematic analysis of the most up-to-date published

research was conducted using the SCOPUS database, which was comprised of three stages. The same selection criteria were employed as in the initial research, again excluding articles published prior to 2014 and those of non-European origin.

The search string “biodiversity” yielded a total of 112,210 search results, the majority of which originated from the disciplines of agricultural and biological sciences. A total of 69 articles were obtained when the term “biodiversity” was combined with different keywords synonymous with public catering (see the first line in Table 1). As mentioned, we focused on public catering as a subcategory of out-of-home catering. After screening headlines and abstracts to assess their relevance to public catering, 68 were deemed to be irrelevant. This indicates a current lack of research examining the promotion of biodiversity through public catering. An overview of the search processes is provided in Figure 3.

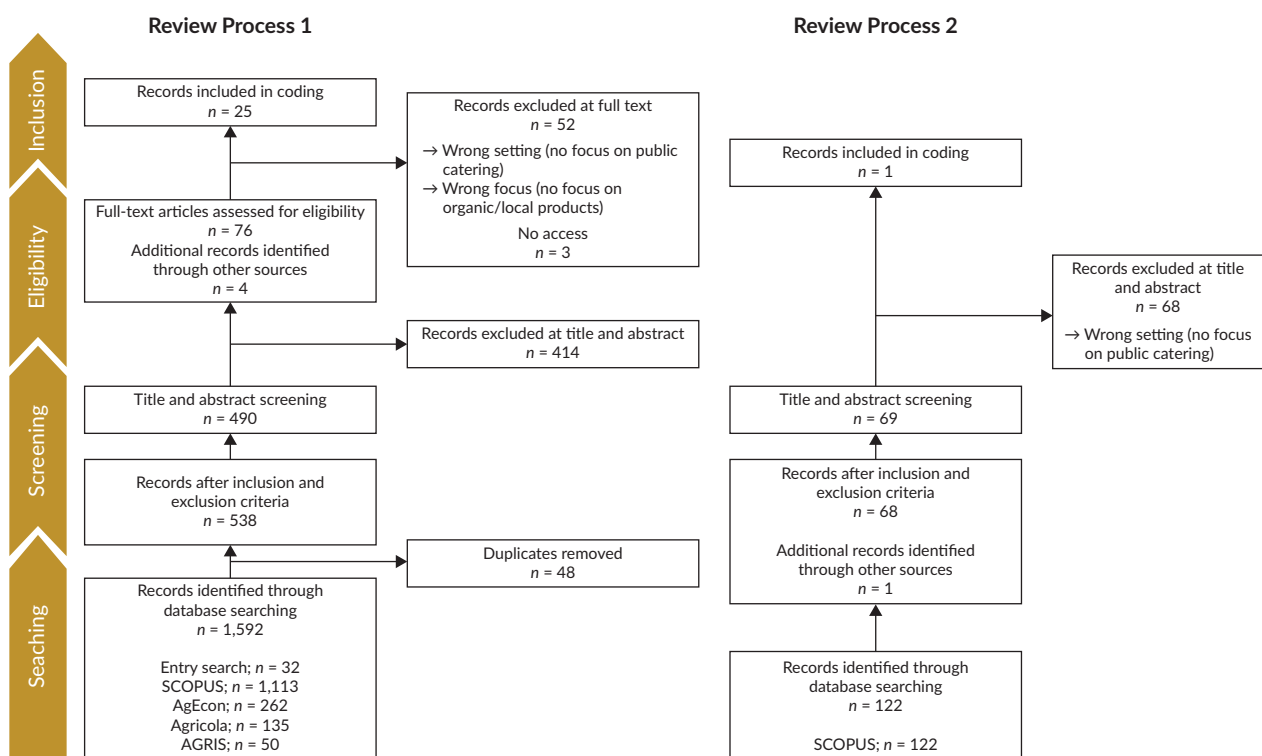


Figure 3. Depiction of the systematic literature review process.

In this article, we used qualitative content analysis to identify the most challenging barriers and most successful drivers for increasing biodiversity-friendly, organic, and local products in public catering. This highly structured evaluation method examines text material step by step, making the procedure intersubjectively comprehensible and verifiable by others through a clearly defined process (Mayring, 2022). The qualitative content analysis software MAXQDA was used to analyze the 26 selected articles. By developing a deductive-inductive category system, the scientific articles were analysed to identify key barriers and drivers to the incorporation of organic and local food in public procurement with positive effects on biodiversity. The code system utilized represents the public catering system from the perspective of the food system approach (see Figure 1) and includes the policy framework, the food environment, and all stakeholders and kitchen processes. Biodiversity has been included as its own code for analysis to discover the connection between biodiversity and public catering more precisely. The main codes used were as follows:

- A: Barriers (all aspects that act as barriers to the purchase of organic and local products);
- B: Drivers (all aspects that promote organic and local products in public catering);
- C: Governance (all aspects relating to the regulatory system and the processes between politics, administration, and civil society);
- D: Market and value chains (all aspects along the value chain including stakeholders, production, logistics, and distribution);
- E: Economic factors (all aspects of the food environment related to budget and economic framework conditions);
- F: Transformation in the kitchens (all aspects related to processes in the kitchen);
- G: Biodiversity (all aspects of biodiversity in the context of public catering).

To identify the main barriers to and drivers of the increased use of local organic products, we conducted a frequency analysis using MAXQDA's code relations browser. MAXQDA's visual tool displays the relationship between codes and the frequency of their overlap. We examined the overlap of the codes Barriers and Drivers (A and B) with the other codes (D–G) in order to identify the most frequently mentioned codes, which represent the most relevant barriers and drivers discussed in the scientific literature.

4. Results

This section presents the results of the literature analysis, focusing on the main barriers and drivers affecting the use of organic and local food in public catering. Further specific potential and challenges for promoting biodiversity-friendly products are analysed in Section 4.3. An overview of the identified barriers and drivers, organized by frequency, is presented in Table 2.

Table 2. Main barriers and drivers identified in the literature analysis.

Barriers	Amount	Drivers	Amount
Availability of organic and local products	21	Networking and cooperation along the value chain	13
Kitchen budget	17	Political will and motivation	10
Procurement policy	16	Well-trained kitchen staff	10
Consumer demand	10	Participation	8

The numbers indicate the frequency of mentionings in the literature, which can lead to interpretations of how relevant these factors are, i.e., the most mentioned factors can be interpreted as having more relevance for promoting organic and local food in public catering.

4.1. Main Barriers

4.1.1. Availability of Organic and Local Products

The availability of organic and local products is one of the main barriers. Several articles highlight that canteens face difficulties in securing a sufficient quantity of, especially pre-processed, organic, and local products for public kitchens. Limiting factors are the lack of local supply, underrepresentation in wholesale markets, procurement procedures, and the degree of pre-processing available.

The local supply of organic food often does not meet the specific demands of canteens (Risku-Norja & Løes, 2017), especially when organic food is only produced by small farms and local businesses (Filippini et al., 2018). Consequently, the required quantities of goods are unavailable or more difficult to obtain (Filippini et al., 2018; Hoinle & Klosterkamp, 2023; Kraljevic & Zanasi, 2023; Kujala et al., 2022; Lassen et al., 2023). Another significant factor affecting availability is the limited offer of organic products in the wholesale trade. Organic local producers often struggle to meet the volume and quality demands of wholesalers, making market access challenging (Braun et al., 2018; Filippini et al., 2018). From a kitchen perspective, additional planning efforts would be necessary to source certain organic products, such as organic meat or dairy products, that are unavailable in retail or only available in limited quantities. In addition, public tenders are often formulated in a way that further excludes small businesses through requirements on pricing, product range, and order volumes (Aleksejeva, 2022; Braun et al., 2018; Kujala et al., 2022; von Braun et al., 2023).

A further crucial, frequently mentioned barrier is the lack of pre-processing facilities which are the connection point between farms and public kitchens. As public kitchens rely on peeled, pre-cut, and pre-cooked products for their processes, the available range of organic local food is often unsuitable for public catering. As mentioned in different European studies, there is a lack of pre-processing infrastructure for organic local products in several countries (Braun et al., 2018; Hoinle & Klosterkamp, 2023; Kujala et al., 2022; Lassen et al., 2023; Risku-Norja & Løes, 2017).

4.1.2. Kitchen Budget

Another significant barrier to the transition to organic food in public catering is the high cost of organic produce, especially local organic food (Cruz et al., 2023; Filippini et al., 2018; Hauschildt & Schulze-Ehlers, 2014; Kraljevic & Zanasi, 2023). While the higher costs of organic products do not prevent their introduction, they do present a challenge to increasing the proportion of organic products used in kitchens on a larger scale (Filippini et al., 2018).

A major barrier for public kitchens is, therefore, their limited budget. In the context of rising food prices, outsourcing of the labour force, and just-in-time logistics, public catering is under such enormous efficiency pressure that the introduction of high volumes of local organic products is a major difficulty (Filippini et al., 2018; Risku-Norja & Løes, 2017; Schäfer & Haack, 2023; Schleiffer et al., 2022; Simon et al., 2023).

4.1.3. Procurement Policy

The public procurement norms, defined by Directive 2014/24/EU, are widely regarded as an obstacle to the promotion of local food. As public tenders for canteen food are issued at the EU level, and the principle of equal opportunities applies to suppliers, smallholders, and local producers in particular are exposed to international competition where they cannot compete on price alone (Kraljevic & Zanasi, 2023; Kujala et al., 2022; Sanz Sanz et al., 2022). In addition, the formal requirements and the design of the tenders—such as minimum order quantities and strict deadlines—often make it difficult for small producers and local suppliers to participate (Schäfer & Haack, 2023).

With its Green Public Procurement policy, the EU is opening up the possibility of including sustainability criteria in procurement processes, potentially favouring organic products. There is also the option to source

local seasonal products on the basis of more climate-friendly short transportation routes as criteria (European Commission, 2019). However, especially when it comes to higher proportions of organic products, local sourcing with higher logistics costs and smaller production volumes is more difficult to implement than offering a high proportion of organic food from larger nationwide providers at a fixed price due to differences in cost-efficiency (Braun et al., 2018; Filippini et al., 2018). Additionally, procurement managers often lack clarity on implementing sustainability criteria and face legal uncertainties regarding the correct application at the administrative level (Risku-Norja & Løes, 2017; Sanz Sanz et al., 2022; Schäfer & Haack, 2023). For these reasons, procurement guidelines often hinder the availability of organic local products in practice.

4.1.4. Consumer Demand

Lastly, consumer demand can be a barrier to introducing more organic and local food in public canteens. Procurement of organic and local food is hindered if consumers have little interest and are unwilling to bear the necessary costs. The willingness to pay for food offered by public kitchen operators is relatively low in Germany, especially in daycare and school catering settings (Hauschildt & Schulze-Ehlers, 2014; Lopez et al., 2020). Studies show that there is greater consumer interest in locally sourced, rather than organic food in terms of improving sustainability. This suggests that offering more local dishes and highlighting local origins can help to meet consumer demand (Braun et al., 2018; Scheerer et al., 2024).

Additionally, the literature identifies obstacles resulting from the intrinsic characteristics of the products themselves or from consumer inertia factors, such as “neophobia”—the fear of adopting innovations, including those related to food (Simon et al., 2023). A study about school catering in Portugal shows that “meat-centered” cultural perceptions of a “proper meal” can hinder the introduction of sustainable dishes (Graça et al., 2022, p. 331). However, some studies show that there has been a rising interest towards vegan and vegetarian meals in the past years (Lopez et al., 2020). Thus, addressing consumer demand is an important factor in the transformation towards more local and organic products in public catering (Kujala et al., 2022).

4.2. Main Drivers

4.2.1. Networking and Cooperation Along the Value Chain

Networking and cooperation between the various stakeholders along the value chain is a prerequisite and therefore a key factor for organic food in public catering and the promotion of local value chains and food networks (Aleksejeva, 2022; Cruz et al., 2023; Filippini et al., 2018; Hoinle & Klosterkamp, 2023; Kraljevic & Zanasi, 2023; Lassen et al., 2023; Martin et al., 2022; Perignon et al., 2024; Risku-Norja & Løes, 2017; Sanz Sanz et al., 2022; Schäfer & Haack, 2023; Spyridon & Mikkelsen, 2018). Networking and cooperation can take place in various forms along the value chain, for example between local farmers, processors, and canteens. In France, new partnerships have been established between kitchens and local small and medium enterprises that can process fresh local fruit and vegetables, filling the gap in pre-processed products for professional kitchens (Sanz Sanz et al., 2022). The exchange of experience and best practices between different stakeholders in the value chain is seen as particularly beneficial (Martin et al., 2022; Schäfer & Haack, 2023), as is the pooling of resources for shared logistics structures (Aleksejeva, 2022). In this way,

cooperation and networking can counteract some of the barriers, such as the lack of availability of pre-processed organic local food.

4.2.2. Political Will and Stakeholder Motivation

The political will and motivation of key stakeholders, such as policymakers and kitchen management, constitute a crucial enabling factor. Political support and commitment to the promotion of locally produced food and organic products in public catering are identified as fundamental factors (Filippini et al., 2018; Risku-Norja & Løes, 2017; Smith et al., 2016). This support is vital, particularly during the initial stages of implementing new strategies (Sanz Sanz et al., 2022; Spyridon & Mikkelsen, 2018).

The importance of motivation extends beyond policymakers to all stakeholders within the food system (Filippini et al., 2018; Kraljevic & Zanasi, 2023; Sanz Sanz et al., 2022). Sanz Sanz et al. (2022) found that the individual motivations of public officials are central to the implementation of the cities' food policy. The personal commitment of catering and procurement staff is crucial in overcoming barriers to preparing, awarding, and managing more sustainable and healthier food procurement contracts. In this case, the authors considered personal motivation to be more important than political will in overcoming barriers in the implementation process (Sanz Sanz et al., 2022).

4.2.3. Well-Trained Kitchen Staff

The inclusion of more organic local products often goes hand in hand with a reduction in meat portions or an increase in plant-based dishes. These dishes should be tasty and attractive to consumers. Staff training to create and prepare appealing vegetarian dishes using local organic produce is one of the key drivers in the shift to using more local organic products in the catering sector (Lopez et al., 2020). In practice, however, there is a lack of qualified kitchen staff with the skills to prepare plant-based dishes or use fresh produce (Lopez et al., 2020; Martin et al., 2022). The preparation of vegetarian and vegan dishes is still barely addressed in most vocational training programs. Recent staff shortages in the catering sector and the widespread use of convenience products in kitchens present additional challenges (Lopez et al., 2020). Schäfer and Haack (2023) argue that outsourcing and the flexibility of the labour force in the German catering sector hinder the creation of tasty and creative dishes. Thus, improving working conditions in public catering, together with enhancing further training options, is a key factor for improving sustainability outcomes (Hoinle & Klosterkamp, 2023).

4.2.4. Participation of Stakeholders

Participatory processes involving public catering stakeholders are identified as an important lever in the transition to more organic and local products (Cruz et al., 2023; Graça et al., 2022; Sanz Sanz et al., 2022; Smith et al., 2016). The formation of new structures, such as delivery structures, distribution channels, or procurement tenders, developed through participatory processes are more resilient and more responsive to stakeholder needs (Cruz et al., 2023). Participation is particularly recommended for the following measures: developing a food strategy (Risku-Norja & Løes, 2017); awareness raising and education about sustainable food (Hoinle & Klosterkamp, 2023); fostering acceptance of change; and mobilizing local communities and society as a whole (Reinders et al., 2024). In Italy, for instance, parents participate in canteen committees to

shape sustainable public school food procurement. This enables the consumer perspective to be considered, thereby reducing transaction costs and facilitating the flow of information (Filippini et al., 2018).

4.3. Relevance of Biodiversity in Public Catering

The qualitative content analysis of the selected articles focusing on biodiversity with their own code revealed that this concept was rarely mentioned in articles about public catering. Biodiversity was mostly mentioned in introductions, highlighting the relationship between the global food system and biodiversity loss as a sustainability challenge (Spyridon & Mikkelsen, 2018). In this context, several articles mentioned the potential of organic farming methods to produce better biodiversity outcomes (Aleksejeva, 2022; Daugbjerg, 2023). Nevertheless, some close links have been identified between biodiversity and public catering.

Braun et al. (2018) discuss the example of newly founded organic farms in Brandenburg, which started with a strong commitment to family farming and biodiversity. However, cultivating a wide diversity of vegetable crops was difficult to maintain due to the high workload involved. Ultimately, they focused on fewer crops, selling them at wholesale organic markets. This illustrates the practical challenges of implementing farming methods to foster biodiversity.

Two articles demonstrated the potential for linking biodiversity with short value chains to public catering. By emphasizing seasonality, local culinary traditions, and biodiversity, short food supply chains can be developed (Filippini et al., 2018). In this example, biodiversity is promoted by growing different varieties of the same product (e.g., tomatoes). Kraljevic and Zanasi (2023) presented a case study from the Italian biodistrict of Cilento, where a municipality is working on a project to develop 100% organic school canteens. The goal in this case is to almost rely on organic local production entirely, suggesting that an improvement in the synchronization with producers is a very likely outcome. The authors emphasize that “this goal is supported by the farmers’ focus on increasing biodiversity in organic production, consequently broadening the range of organic products supplied by the Biodistrict” (Kraljevic & Zanasi, 2023, p. 13). This example provides an initial insight into how biodiversity can be promoted through local value chains involving organic, local farmers.

As shown in Section 2.1, there are also studies that assess the biodiversity impact of certain product groups in the wider category of the out-of-home catering sector. They mainly focus on providing a tool to assess biodiversity in different products that can be purchased by kitchen management as a way to promote biodiversity in menu planning (Chaudhary & Kastner, 2016; Crenna et al., 2019; Heinz et al., 2023; Monetti et al., 2021).

5. Discussion

To address the issue of promoting profound transitions in the food system toward more sustainability and biodiversity, we identified four different barriers and four drivers that contribute to the integration of biodiversity-friendly, organic, and local food in public catering. In this section, we connect our findings with the LP approach developed by Abson et al. (2017) to distinguish between deeper and shallower LPs (based on Abson et al., 2017; Fischer & Riechers, 2019; Meadows, 1999). This enables us to analyze our results from a novel perspective, in order to identify strategies for fostering effective interventions in the food

system. As outlined in Section 2.2, the LPs can be classified into four main categories: parameters, feedbacks, design, and intent. Figure 4 illustrates the alignment between these LPs and the barriers and drivers identified in our study. Based on the assumption of leveraging change in the food system, we formulate potential action strategies to facilitate transition processes and discuss the effectiveness of the different measures to promote transitions. The four LPs differ in their effectiveness in transforming a system—intent being the deepest and parameters the most shallow.

In what follows, we outline the rationale behind linking each LP to its corresponding barriers and drivers. It should be noted, however, that the presented Figure 4 represents only an approximation of a more complex reality, and that alternative interconnections are also possible.

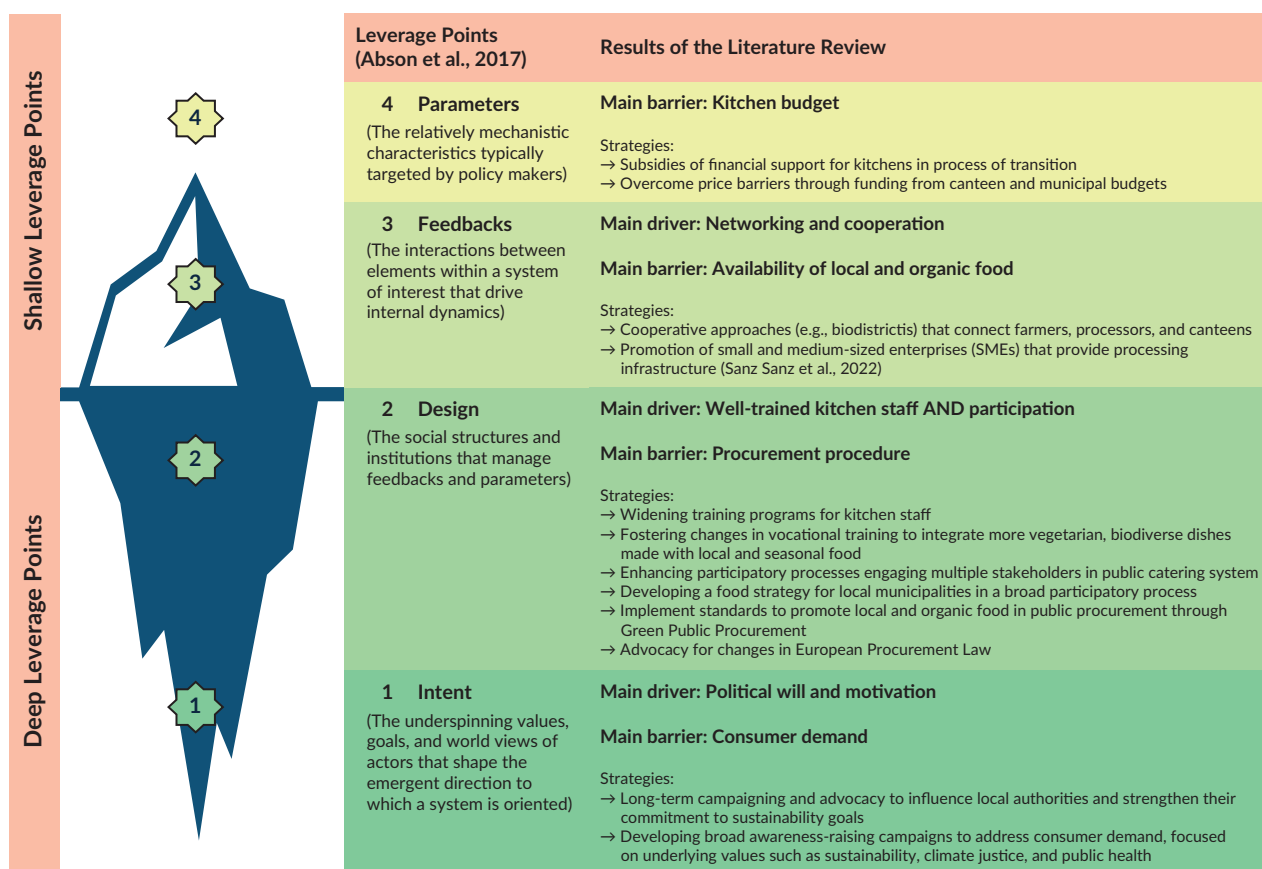


Figure 4. Overview of key barriers and drivers linked to different levels of LPs. Source: Adapted from Abson et al. (2017).

We identified “kitchen budget” (parameter) as well as “availability of organic and local food” and “network and cooperation along the value chain” (feedback) as shallow LPs that are easier to address but have less impact on system-wide change. Abson et al. (2017) define subsidies and payments to farmers as parameters. Therefore, it could be argued that kitchen budget constraints could be addressed through programs that financially support public kitchens in the process of increasing biodiversity-friendly, organic, and local food offers in their menus.

We identified “networking and cooperation along the value chain” as a feedback mechanism that could potentially produce positive, self-perpetuating effects. As “lack of availability” was identified as one of the

strongest barriers, effective mechanisms that strengthen cooperation between farmers, processors, and kitchens could address this barrier and lead to positive feedback effects in the food system. Examples of such strategies include the Biodistrict approach in Italy, which aims to strengthen networks between local organic producers and public canteens (Kraljevic & Zanasi, 2023). The strengthening of such feedback and network strategies can be regarded as having a high potential for fostering sustainable transitions in a region and should be improved through specific programs.

In the “design” category of LP, Abson et al. (2017) emphasize the importance of information flows, rules, and power relations. As shown in Section 2.1, eating habits and the choice of food product groups are decisive for biodiversity-friendly public catering. In particular, a plant-based diet with local organic products is more favourable. To achieve this, the results showed that kitchen staff need more training in creative menu planning. Accordingly, we identified the driver “well-trained kitchen staff” as LP that can be encouraged through vocational training and additional continuing professional development training for kitchen staff. This intervention point is more challenging to implement, as its outcomes are likely to only be seen in the long term. Based on our literature analysis, we argue that these interventions should include training programs and changes in vocational curricula that focus on generating creative menus with less meat and more local, seasonal foods, thereby promoting local biodiversity. Power relations and system rules represent deep LPs that are challenging to address. This particularly relates to procurement policy as a barrier, as the legal framework operates at a Europe-wide scale (European procurement policy), making it difficult for local actors to influence it. “Participation” was identified as a key driver in our literature analysis, and we see it as an opportunity to involve diverse food system actors in the transition process. This could take the form of involving students in school menu planning processes or developing a food strategy through a broad participatory process to shape the procurement policy of a local municipality.

System “intent” represents the most challenging area for intervention points in the food system. We linked “political will” and “consumer demand” to this category. While consumer demand also has feedback effects, it reflects underlying values that influence whether or not people choose biodiversity-friendly, organic, and local food. Similarly, political will is influenced by the values and goals of individual politicians and local authorities, which may or may not align with sustainability principles. In both cases, these values and goals are difficult to change and require long-term awareness-raising and advocacy campaigns, often developed by civil society actors.

As noted by Abson et al. (2017), different LPs interact with each other and can be mutually reinforcing. Thus, the LPs could be combined in a coherent way in order to create a holistic approach to transforming the food system toward more sustainability and biodiversity. This could mean that policy subsidies for organic, biodiversity-friendly kitchens (parameters) are linked with strategic networking measures for connecting actors along the food value chain (feedback) based on a participatory process (design). Further, awareness-raising campaigns about biodiversity and food address the underlying values and goals of the actors in the long run (intent).

The suggested combination of these action strategies means that all actors involved in public catering (see Figure 1)—farmers, distributors, processors, public purchasers, public kitchens, and policymakers—have a role in making public catering more biodiversity-friendly and sustainable. In particular, the decisions made by actors along the value chain influence this process, including the cultivation method used for food production, the

range of products available in the trade, the choice of products purchased in the public kitchens, the dishes selected at the counter, and the conditions set at the political level to increase the use of biodiversity-friendly, organic, and local products in public catering.

By highlighting the relevance of biodiversity in public catering, this study contributes to the existing lack of research in this field. However, our study has several limitations. As the existing literature focuses mainly on organic and local products in public catering, we had to conduct two searches to specifically analyse the role of biodiversity in public catering. Thus, the barriers and drivers identified mainly relate to the integration of local and organic food in public catering. However, as explained in Section 1, the promotion of organic farming and short food supply chains has synergies with the promotion of local biodiversity. Thus, the identified policies and LPs can be interpreted as ways to promote biodiversity-friendly dishes in public catering. Further research is needed to deepen the analysis of biodiversity in public catering, especially on certification schemes to make biodiversity-friendly products transparent to consumers, as well as research on strategies to improve the ways in which biodiversity, in particular, can be promoted in public catering.

6. Conclusion

The findings of our study indicate that biodiversity remains an undervalued and under-researched topic in the context of public catering. In this study, we have conceived biodiversity both in the sense of “agrobiodiversity”—bringing diverse varieties of vegetables or legumes onto consumer’s plates and in the sense of preserving areas for pollinators within the agroecosystem. As evidenced by the findings of previous studies, organic agriculture represents the most promising approach for simultaneously enhancing food production and biodiversity conservation (Sanders & Heß, 2019).

Our research aim was to identify the key barriers and drivers influencing the uptake of organic and local food in public catering and to ascertain how biodiversity could be advanced through public catering. We undertook a systematic literature review to identify the most relevant key barriers and drivers, which included analysing studies in the European context that were published in the past 10 years. According to our systematic literature review, the main barriers preventing public canteens from sourcing biodiversity-friendly, organic, and local food are: (a) lack of availability of organic or local food, especially pre-processed products; (b) limited budgets for kitchens in the public sector; (c) procurement policies; and (d) consumer demand. Our results show that the most relevant drivers are: (a) cooperation and networking along the value chain; (b) political will and motivation; (c) well-trained kitchen staff; and (d) participation. These key barriers and drivers should not be seen as isolated but as interconnected factors. Thus, the barrier “lack of availability of organic and local food” can be addressed by networking strategies that connect farmers with processors and public kitchens. Further, the limited budget of public kitchens is connected to the political will and motivation of powerful stakeholders to design better policies for this sector. The literature review revealed a lack of research regarding biodiversity in the context of public procurement. Biodiversity was mentioned in only a few studies related to public catering which highlighted challenges, such as implementing diverse cropping systems in the context of economic constraints. As shown in Section 4.3, there are examples of the promotion of biodiversity through the implementation of short food supply chains with school canteens in Biodistricts in the case of Italy (Kraljevic & Zanasi, 2023).

In order to identify effective LPs for promoting food system change towards a more biodiversity-friendly public catering system, we analyzed our results using the LP theory developed by Abson et al. (2017) based

on Meadows (1999). This analysis enabled us to deduce several action strategies and policy measures. As demonstrated, shallow LPs are easier to implement but have less impact. However, these strategies can serve as a starting point for transitioning to more biodiversity-friendly canteens. These measures include subsidies for public canteens to transition to organic and biodiversity-friendly menus. Deeper and more challenging LPs involve changes in procurement policies, political will, and consumer demand. This would require long-term campaigns and awareness-raising programs as well as participatory approaches that connect all actors in the food system. Meanwhile, “medium-scale” interventions such as cooperative platforms that link farmers, processors, and kitchens, and training programs for kitchen staff to integrate more local, seasonal foods into diverse recipes are also recommended to improve sustainability and biodiversity outcomes in public catering. In effect, there is a need for holistic approaches that combine different intervention points in a coherent way as part of a long-term strategy with short-term measures. Further research is necessary to analyze and develop such strategies for promoting biodiversity through the creation of local value chains that supply public canteens.

Acknowledgments

We would like to thank the anonymous reviewers for their valuable feedback and insightful suggestions, which greatly improved the quality of this manuscript. We gratefully acknowledge the English editing performed by Alison Butler and Haley Swanger. Also, we like to thank Professor Dr Claudia Bieling, Department of Societal Transition & Agriculture at the University of Hohenheim, Germany, for her helpful comments on an earlier draft.

Funding

The article is the result of two research projects: BiodivRegio—Research on Concepts for the valorisation of Food From Biodiversity-Friendly, Regional Agriculture, which is funded by the Baden-Württemberg Ministry of Science, Research and the Arts, and co-financed by the European Union’s European Regional Development Fund (ERDF). The second project BioregioKantine—Strategies for Local and Organic Food in Public Catering was funded by the Baden-Württemberg Ministry of Food, Rural Affairs, and Consumer Protection.

Conflict of Interests

The authors declare no conflict of interests.

Supplementary Material

Supplementary material for this article is available online in the format provided by the authors (unedited).

References

- Abson, D., Fischer, J., Levonton, J., Newig, J., Schomerus, T., Vilsmaier, U., von Wherden, H., Abernethy, P., Ives, C. D., Jager, N. W., & Lang, D. J. (2017). Leverage points for sustainability transformation. *Ambio*, 46, 30–39.
- Aleksejeva, L. (2022). Problems of local organic food procurement management at general education schools in Latvia. *Proceedings of the 2022 International Conference Economic Science for Rural Development*, 56, 14–24. <https://doi.org/10.22616/ESRD.2022.56.001>
- Andhov, M., Mikulic, S., & Nielsen, L. R. (2024). *Transforming food systems: The role of public procurement*. Routledge. <https://doi.org/10.4324/9781003393023-16>
- Azam-Ali, S. N., Gregory, P. J., & Jahanshahi, E. (2024). Diversifying the UK agrifood system: A role for neglected and underutilised crops. *Agronomy*, 14(4), Article 853. <https://doi.org/10.3390/agronomy14040853>

- Barbeito, P., Coste, M., Lano, E., Pizzato, M., Ponzio, R., & Sardo, P. (2020). *If biodiversity lives, the planet lives* (Slow Food's Position Paper on Biodiversity). Slow Food. https://www.fondazione Slow Food.com/wp-content/uploads/2021/05/ENG_Biodiversity_Paper_Long_Version.pdf
- Braun, C., Rombach, M., Häring, A., & Bitsch, V. (2018). A local gap in sustainable food procurement: Organic vegetables in Berlin's school meals. *Sustainability*, 10(11), 4245. <https://doi.org/10.3390/su10114245>
- Brondizio, E. S., Settele, J., Díaz, S., & Ngo, H. T. (2020). *Global assessment report on biodiversity and ecosystem services of the intergovernmental science-policy platform on biodiversity and ecosystem services*. IBES Secretariat.
- Campbell, B. M., Beare, D. J., Bennett, E. M., Hall-Spencer, J. M., Ingram, J. S. I., Jaramillo, F., Ortiz, R., Ramankutty, N., Sayer, J. A., & Shindell, D. (2017). Agriculture production as a major driver of the Earth system exceeding planetary boundaries. *Ecology and Society*, 22(4), Article 8. <https://doi.org/10.5751/ES-09595-220408>
- Chaudhary, A., & Kastner, T. (2016). Land use biodiversity impacts embodied in international food trade. *Global Environmental Change*, 38, 195–204. <https://doi.org/10.1016/j.gloenvcha.2016.03.013>
- Chaves, V. M., Rocha, C., Gomes, S. M., Jacob, M. C. M., & da Costa, J. B. A. (2023). Integrating family farming into school feeding: A systematic review of challenges and potential solutions. *Sustainability*, 15(4), Article 2863. <https://doi.org/10.3390/su15042863>
- Commission recommendation (EU) 2021/2279 of 15 December 2021 on the use of the environmental footprint methods to measure and communicate the life cycle environmental performance of products and organisations. *Official Journal of the European Union*, L 471. <https://eur-lex.europa.eu/eli/reco/2021/2279/oj/eng>
- Crenna, E., Sinkko, T., & Sala, S. (2019). Biodiversity impacts due to food consumption in Europe. *Journal of Cleaner Production*, 227, 378–391. <https://doi.org/10.1016/j.jclepro.2019.04.054>
- Cruz, J. L., Hewitt, R. J., & Hernández-Jiménez, V. (2023). Can public food procurement drive agroecological transitions? Pathways and barriers to sustainable food procurement in higher education institutions in Spain. *Agroecology and Sustainable Food Systems*, 47(10), 1488–1511. <https://doi.org/10.1080/21683565.2023.2248917>
- Daugbjerg, C. (2023). Using public procurement of organic food to promote pesticide-free farming: A comparison of governance modes in Denmark and Sweden. *Environmental Science & Policy*, 140, 271–278. <https://doi.org/10.1016/j.envsci.2022.12.012>
- De Falco, E., Senatore, A., Roscigno, G., & Pergola, M. (2022). The artichoke “Bianco di Pertosa”: The enhancement of crop residues through environmentally friendly uses. *Horticulturae*, 8(10), Article 900. <https://doi.org/10.3390/horticulturae8100900>
- Divéky-Ertsey, A., Gál, I., Madaras, K., Pusztai, P., & Csambalik, L. (2022). Contribution of pulses to agrobiodiversity in the view of EU protein strategy. *Stresses*, 2(1), 90–112. <https://doi.org/10.3390/stresses2010008>
- European Commission. (2017). *Agriculture: A partnership between Europe and farmers*. Publications Office of the European Union. <https://doi.org/10.2775/358697>
- European Commission. (2019). *Commission staff working document: EU green public procurement criteria for food, catering services and vending machines* (SWD(2019) 366 final). <https://data.consilium.europa.eu/doc/document/ST-12672-2019-INIT/en/pdf>
- European Commission. (2021). *Communication from the commission to the European parliament, the council, the European economic and social committee and the committee of the regions: On an action plan for the development of organic production* (COM(2021) 141 final/2). <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52021DC0141R%2801%29>

- Filippini, R., De Noni, I., Corsi, S., Spigarolo, R., & Bocchi, S. (2018). Sustainable school food procurement: What factors do affect the introduction and the increase of organic food? *Food Policy*, 76, 109–119. <https://doi.org/10.1016/j.foodpol.2018.03.011>
- Fischer, J., & Riechers, M. (2019). A leverage points perspective on sustainability. *People and Nature*, 1(1), 115–120. <https://doi.org/10.1002/pan3.13>
- Flörke, S., Keller, M., Ross, S., & Herzig, C. (2022). *Regiowoche Kassel: Praxistest für eine bioregionale Kita- und Schulverpflegung in Stadt und Landkreis Kassel—Herausforderungen, Potenziale und Handlungsempfehlungen*. Projektteam RegioWoche Kassel. <https://www.uni-giessen.de/de/fbz/fb09/institute/ibae/bea/projekte/bioregion-ks>
- Food and Agriculture Organization of the United Nations. (2004). *Building on gender, agrobiodiversity and local knowledge: What is agrobiodiversity?* <https://www.fao.org/4/y5609e/y5609e00.htm#Contents>
- Graça, J., Roque, L., Guedes, D., Campos, L., Truninger, M., Godinho, C., & Vinnari, M. (2022). Enabling sustainable food transitions in schools: a systemic approach. *British Food Journal*, 124(13), 322–339. <https://doi.org/10.1108/BFJ-11-2021-1188>
- Hanke, G., & Wunder, S. (2023). *Regionalisierung von Ernährungssystemen: Einschätzung von Nachhaltigkeitspotenzialen und Darstellung politischer Handlungsansätze*. Umweltbundesamt. <https://www.umweltbundesamt.de/publikationen/regionalisierung-von-ernaehrungssystemen>
- Hauschildt, V., & Schulze-Ehlers, B. (2014). An empirical investigation into the adoption of green procurement practices in the German food service industry. *International Food and Agribusiness Management Review*, 17(3). <https://doi.org/10.22004/AG.ECON.183433>
- Heinz, J., Menzel, A., Wagner, L., Langen, N., & Speck, M. (2023). Dishing up biodiversity: How does out-of-home catering affect biodiversity? Assessment methodology and implementation in commercial kitchens. *Ernaehrungs Umschau* 2023, 70(10), 116–124.
- High Level Panel of Experts on Food Security and Nutrition. (2017). *Nutrition and food systems: A report by the High Level Panel of Experts on Food Security and Nutrition of the committee on world food security*. <https://www.fao.org/fsnforum/resources/policy-documents/nutrition-and-food-systems-report-high-level-panel-experts-food-security>
- Hoinle, B., & Klosterkamp, S. (2023). Food justice in public-catering places: Mapping social-ecological inequalities in the urban food systems. *Frontiers in Sustainable Food Systems*, 7, Article 1085494. <https://doi.org/10.3389/fsufs.2023.1085494>
- Hüber, C., Zettl, F., Hartung, J., & Müller-Lindenlauf, M. (2022). The impact of maize-bean intercropping on insect biodiversity. *Basic and Applied Ecology*, 61, 1–9. <https://doi.org/10.1016/j.baae.2022.03.005>
- Joannides, J. (2012). *Local food systems as regional economic drivers in southern Minnesota*. Southern Minnesota Initiative Foundation (SMIF) and The McKnight Foundation by the Minnesota Institute for Sustainable Agriculture (MISA) at the University of Minnesota. <https://www.mcknight.org/wp-content/uploads/pdf-2-4-mb.pdf>
- Kliem, L., & Sievers-Glotzbach, S. (2022). Seeds of resilience: The contribution of commons-based plant breeding and seed production to the social-ecological resilience of the agricultural sector. *International Journal of Agricultural Sustainability*, 20(4), 595–614. <https://doi.org/10.1080/14735903.2021.1963598>
- Kraljevic, B., & Zanasi, C. (2023). Drivers affecting the relation between biodistricts and school meals initiatives: Evidence from the Cilento biodistrict. *Frontiers in Sustainable Food Systems*, 7, Article 1235871. <https://doi.org/10.3389/fsufs.2023.1235871>
- Kujala, S., Hakala, O., & Viitaharju, L. (2022). Understanding regional variation in the use of local food in public catering. *British Food Journal*, 124(10), 3323–3337. <https://doi.org/10.1108/BFJ-04-2021-0385>

- Lassen, A. D., Thorsen, A. V., & Trolle, E. (2023). Current Practices and opportunities for more sustainable public food procurement: A qualitative study among Danish municipalities and regions. *Foods*, 12(10), 1–17. <https://doi.org/10.3390/foods12101975>
- Lindström, H., Lundberg, S., & Marklund, P.-O. (2022). Green public procurement: An empirical analysis of the uptake of organic food policy. *Journal of Purchasing and Supply Management*, 28(3), Article 100752. <https://doi.org/10.1016/j.pursup.2022.100752>
- Lopez, V., Teufel, J., & Gensch, C.-O. (2020). How a transformation towards sustainable community catering can succeed. *Sustainability*, 12(1), Article 101. <https://doi.org/10.3390/su12010101>
- Mantyka-Pringle, C. S., Visconti, P., Di Marco, M., Martin, T. G., Rondinini, C., & Rhodes, J. R. (2015). Climate change modifies risk of global biodiversity loss due to land-cover change. *Biological Conservation*, 187, 103–111. <https://doi.org/10.1016/j.biocon.2015.04.016>
- Martin, G., Pujos, L., & Magrini, M.-B. (2022). Micro-level sustainability transition pathways of institutional food services in France. *Frontiers in Sustainable Food Systems*, 6, Article 943020. <https://doi.org/10.3389/fsufs.2022.943020>
- Mattas, K., Raptou, E., Alayidi, A., Yener, G., & Baourakis, G. (2023). Assessing the interlinkage between biodiversity and diet through the mediterranean diet case. *Advances in Nutrition*, 14(3), 570–582. <https://doi.org/10.1016/j.advnut.2023.03.011>
- Mayring, P. (2022). *Qualitative Inhaltsanalyse: Grundlagen und Techniken*. Julius Beltz. <http://nbn-resolving.org/urn:nbn:de:bsz:31-epflicht-2019387>
- Meadows, D. (1999). *Leverage points: Places to intervene in a system*. The Sustainability Institute.
- Molin, E., Lingegård, S., Martin, M., & Björklund, A. (2024). Sustainable public food procurement: Criteria and actors' roles and influence. *Frontiers in Sustainable Food Systems*, 8, Article 1360033. <https://doi.org/10.3389/fsufs.2024.1360033>
- Monetti, S., Pregernig, M., Speck, M., Langen, N., & Bienge, K. (2021). Assessing the impact of individual nutrition on biodiversity: A conceptual framework for the selection of indicators targeted at the out-of-home catering sector. *Ecological Indicators*, 126, Article 107620. <https://doi.org/10.1016/j.ecolind.2021.107620>
- Newbold, T., Hudson, L. N., Hill, S. L. L., Contu, S., Lysenko, I., Senior, R. A., Börger, L., Bennett, D. J., Choimes, A., Collen, B., Day, J., de Palma, A., Díaz, S., Echeverria-Londoño, S., Edgar, M. J., Feldman, A., Garon, M., Harrison, M. L. K., Alhusseini, T., & Purvis, A. (2015). Global effects of land use on local terrestrial biodiversity. *Nature*, 520(7545), 45–50. <https://doi.org/10.1038/nature14324>
- Nguyen, H. (2018). *Sustainable food systems: Concept and framework*. Food and Agriculture Organization of the United Nations. <https://openknowledge.fao.org/handle/20.500.14283/ca2079en>
- Perignon, M., Lepiller, O., Intoppa, B., Valette, É., Roudelle, O., & Wood, A. (2024). The role of school canteens in building more sustainable food systems. In É. Valette, A. Blay-Palmer, B. Intoppa, A. Di Battista, O. Roudelle, & G. Chaboud (Eds.), *Routledge studies in food, society and the environment: Evaluating sustainable food system innovations—A global toolkit for cities* (pp. 77–100). Taylor & Francis. <https://doi.org/10.4324/9781003285441-5>
- Pfefferle, H., Hagsphil, S., & Clausen, K. (2021). Gemeinschaftsverpflegung in Deutschland—Stellenwerte und Strukturen. *Ernährungsumschau*, 8, 470–483.
- Reinders, M. J., Battjes-Fries, M. C. E., Bouwman, E. P., & Meeusen-van Onna, M. J. G. (2024). Effectively implementing healthy and sustainable food practices in out-of-home food service locations: The perspective of the catering staff members. *Appetite*, 193, Article 107152. <https://doi.org/10.1016/j.appet.2023.107152>

- Richardson, K., Steffen, W., Lucht, W., Bendtsen, J., Cornell, S. E., Donges, J. F., Drüke, M., Fetzer, I., Bala, G., von Bloh, W., Feulner, G., Fiedler, S., Gerten, D., Gleeson, T., Hofmann, M., Huiskamp, W., Kummu, M., Mohan, C., & Rockström, J. (2023). Earth beyond six of nine planetary boundaries. *Science Advances*, 9, 1–16.
- Risku-Norja, H., & Løes, A.-K. (2017). Organic food in food policy and in public catering: Lessons learned from Finland. *Organic Agriculture*, 7(2), 111–124. <https://doi.org/10.1007/s13165-016-0148-4>
- Rounsevell, M., Harfoot, M., Harrison, P. A., Newbold, T., Gregory, R. D., & Mace, G. M. (2020). A biodiversity target based on species extinctions: A single target comparable to the 2C climate target may help galvanize biodiversity policy. *Science*, 368(6496), 1193–1195.
- Sanders, J., & Heß, J. (2019). *Leistungen des ökologischen Landbaus für Umwelt und Gesellschaft*. Thünen-Institut. <https://www.thuenen.de/de/newsroom/detail/thuenen-report-65>
- Sanz Sanz, E., Cardona, A., & Napoléone, C. (2022). Motivations of public officials as drivers of transition to sustainable school food provisioning: Insights from Avignon, France. *Journal of Agricultural and Environmental Ethics*, 35(2), Article 6. <https://doi.org/10.1007/s10806-022-09880-9>
- Schäfer, M., & Haack, M. (2023). Overcoming the efficiency paradigm—The challenges of introducing local organic beef in canteens. *Frontiers in Sustainable Food Systems*, 7, Article 1152185. <https://doi.org/10.3389/fsufs.2023.1152185>
- Scheerer, T., Hertweck, D., & Hakenberg, T. (2024, June 24–28). *From crop to click—Organic and digital transformation of out-of-home catering value chains in Germany* [Paper presentation]. 10th International Conference on ICT for Sustainability (ICT4S), Stockholm, Sweden. <https://doi.org/10.13140/RG.2.2.15559.92325>
- Schleiffer, M., Landert, J., & Moschitz, H. (2022). Assessing public organic food procurement: The case of Zurich (CH). *Organic Agriculture*, 12(3), 461–474. <https://doi.org/10.1007/s13165-022-00402-5>
- Seufert, V., & Ramankutty, N. (2017). Many shades of gray: The context-dependent performance of organic agriculture. *Science Advances*, 3(3), Article e1602638. <https://doi.org/10.1126/sciadv.1602638>
- Simon, X., Copena, D., & Pérez-Neira, D. (2023). Assessment of the diet-environment-health-cost quadrilemma in public school canteens. an LCA case study in Galicia (Spain). *Environment, Development and Sustainability*, 25(11), 12543–12567. <https://doi.org/10.1007/s10668-022-02578-y>
- Smith, J., Andersson, G., Gourlay, R., Karner, S., Mikkelsen, B. E., Sonnino, R., & Barling, D. (2016). Balancing competing policy demands: the case of sustainable public sector food procurement. *Journal of Cleaner Production*, 112, 249–256. <https://doi.org/10.1016/j.jclepro.2015.07.065>
- Speck, M., Wagner, L., Buchborn, F., Steinmeier, F., Friedrich, S., & Langen, N. (2022). How public catering accelerates sustainability: A German case study. *Sustainability Science*, 17(6), 2287–2299. <https://doi.org/10.1007/s11625-022-01183-2>
- Spyridon, F., & Mikkelsen, B. E. (2018, September 17–21). *More organic food on the public plate—Need for a new public governance?* [Paper presentation]. Third International Conference: Agriculture and Food in an Urbanizing Society, Porto Alegre, Brazil.
- Stampa, E., & Zander, K. (2022). Backing biodiversity? German consumers' views on a multi-level biodiversity-labelling scheme for beef from grazing-based production systems. *Journal of Cleaner Production*, 370, Article 133471. <https://doi.org/10.1016/j.jclepro.2022.133471>
- Swingland, I. R. (2013). Definition of biodiversity. In S. A. Levin (Ed.), *Encyclopedia of biodiversity* (pp. 399–410). Elsevier. <https://doi.org/10.1016/B978-0-12-384719-5.00009-5>
- Teufel, J., Hermann, A., & Müller, R. (2020). *Biodiversitätskriterien in der Beschaffung II—Weiterentwicklung und praxisbezogene Konkretisierung von Biodiversitätskriterien in ausgewählten Produktgruppen der öffentlichen*

Beschaffung des Bundes. Bundesministerium für Umwelt, Klimaschutz, Naturschutz und nukleare Sicherheit. <https://www.bmu.de/download/biodiversitaetskriterien-in-der-beschaffung-ii-weiterentwicklung-und-praxisbezogene-konkretisierung-von-biodiversitaetskriterien-in-ausgewaehlten-produktgruppen-der-oeffentlichen-beschaffung-des-bundes>

Urban, M. C. (2015). Accelerating extinction risk from climate change. *Science*, 348(6234), 571–573. <https://doi.org/10.1126/science.aaa4984>

von Braun, J., Afsana, K., Fresco, L. O., Hassan, M. H. A., & Torero, M. (2023). *Science and innovations for food systems transformation: Food system concepts and definitions for science and political action*. Springer. https://doi.org/10.1007/978-3-031-15703-5_2

Willett, W., Rockström, J., Loken, B., Springmann, M., Lang, T., Vermeulen, S., Garnett, T., Tilman, D., DeClerck, F., Wood, A., Jonell, M., Clark, M., Gordon, L. J., Fanzo, J., Hawkes, C., Zurayk, R., Rivera, J. A., De Vries, W., Majele Sibanda, L., . . . Murray, C. J. L. (2019). Food in the anthropocene: the EAT-lancet commission on healthy diets from sustainable food systems. *Lancet*, 393(10170), 447–492.

Zhang, M., & Dannenberg, P. (2022). Opportunities and challenges of indigenous food plant farmers in integrating into agri-food value chains in Cape Town. *Land*, 11(12), Article 2267. <https://doi.org/10.3390/land11122267>

About the Authors



Clara Bückart-Neufeld is a PhD student in the Department of Societal Transition and Agriculture at the University of Hohenheim, Germany. She is working on the BiodivRegio project at the Nürtingen-Geislingen University, Germany. Her research focuses on the impact of co-creative workshops on the transition to a resilient economy and a sustainable food system.



Franziska Bürker is a member of the scientific staff at the Karlsruhe Transformation Centre for Sustainability and Cultural Change at the Institute for Technology Assessment and Systems Analysis (ITAS), KIT Karlsruhe. Previously, she worked on the BioregioKantine project at the University of Hohenheim, Germany. Her research focuses on the transformation of food systems, with her current work examining sustainability in public catering.



Birgit Hoinle is a postdoc researcher in the Department of Societal Transition and Agriculture at the University of Hohenheim, Germany. She holds a PhD in geography from the University of Hamburg. Her current research focuses on food justice, urban food policies, and school food. She is an active member of the Food Policy Council Tübingen.

Community Food Systems Report Cards as Tools for Advancing Food Sovereignty in City-Regions

Charles Z. Levkoe ¹ , Mary Anne Martin ² , Karen Kerk ³, and Francesca Hannan ⁴

¹ Canada Research Chair in Equitable and Sustainable Food Systems, Lakehead University, Canada

² Research for Social Change Lab, Trent University, Canada

³ CityStudio, City of Thunder Bay, Canada

⁴ Durham Food Policy Council, Canada

Correspondence: Charles Z. Levkoe (clevkoe@lakeheadu.ca)

Submitted: 14 October 2024 **Accepted:** 5 February 2025 **Published:** 16 April 2025

Issue: This article is part of the issue “Perspectives on Food in the Sustainable City” edited by Birgit Hoinle (University of Hohenheim), Alena Birnbaum (University of Kassel), and Petra Lütke (University of Münster), fully open access at <https://doi.org/10.17645/up.i395>

Abstract

Developing pragmatic possibilities for advancing food sovereignty to address challenges of justice and sustainability within food systems is an essential project for human survival. A practical starting point is to identify existing challenges along with comprehensive strategies that avoid isolated fixes. Community food systems report cards are a tool to inform and influence city-region food systems governance by providing a connected and comprehensive snapshot of these systems, connecting people, places, and processes, and informing research, decision-making, and program planning. This article explores and reflects on the experiences of developing community food systems report cards in Thunder Bay and Durham Region in Ontario, Canada. Through sharing lessons learned, cautions, and limitations, we explore the report cards’ origins, development processes, findings, distribution, and impacts. We argue that community food systems report cards can be a valuable tool for understanding a city-region food systems, monitoring progress, identifying gaps, and comparing and communicating experiences to communities, food system stakeholders, and decision-makers. However, community food systems report cards are only the starting point for advancing food sovereignty in city-region food systems.

Keywords

city-region; food policy councils; food sovereignty; food system assessments; food systems report cards

1. Introduction

Advancing food sovereignty to address the critical challenges of justice and sustainability requires pragmatic, local-level approaches to systems change. However, dominant approaches to policy and programming in the minority world tend to address food-related issues in sector-specific and reactive ways rather than considering the complexities of food systems and the structures underlying contemporary problems (Lang et al., 2009; MacRae, 2011). An important starting point is to identify existing challenges through a joined-up approach to develop integrated strategies. Community food systems report cards are a prominent tool to inform and influence city-regional food systems governance by providing a comprehensive snapshot of these systems.

Food systems report cards reflect particular geographies, bringing together a wide range of information to support several practical, reflective, and visionary functions. Levkoe and Blay-Palmer (2018) write, food systems report cards “can provide a lay of the land, act as a benchmark to inform a historical and contextual analysis as well as identify patterns that point towards future developments” (p. 50). They can serve as an essential part of civil society and municipal decision-making by providing a more complete and interconnected picture of a food system (Bell & Morse, 2011; Hezri & Dovers, 2006). One example of a food systems report card is the Conference Board of Canada’s national report card that compared Canada’s food sector performance to 16 other countries, giving Canada an “A” in food safety” and a “C+” in environmental sustainability” (Le Vallée & Grant, 2016). Another example is Meal Exchange’s campus report card that evaluated sustainable and healthy food on Ontario university campuses and found a stark discrepancy between students’ and food service management’s perceptions regarding the provision of such foods (Maynard et al., 2018). The Report Card on Healthy Food Environments and Nutrition for Children examined the impact of policies supporting and preventing improvement of children’s food behaviours (Olstad et al., 2014), while the Food Counts Pan-Canadian Sustainable Food Systems Report Card tracked existing metrics and information gaps across the food system (Levkoe & Blay-Palmer, 2018).

Food policy councils (FPCs) are increasingly using report cards to promote food sovereignty in their work (Harper et al., 2009). Food sovereignty is described as “the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems” (European Coordination Via Campesina, 2024). Schiff et al. (2022) describe FPCs as follows:

FPCs can be defined as collaborative, membership-driven organizations that bring together stakeholders across private (e.g., small businesses, industry associations), public (e.g., government, public health, postsecondary institutions), and community (e.g., non-profits and charitable organizations) sectors to examine opportunities to implement integrated strategies for improving local and regional food systems. (p. 1)

While diverse in structure, FPCs have emerged across North America, Australia, and parts of Europe to address food systems issues and provide a platform for coordinated action across sectors. FPCs have played a role in developing food systems assessments in several municipalities and regions (see for example Beatrice et al., 2017; Ellsworth & Feenstra, 2010; Freudenberg et al., 2018; Los Angeles Food Policy Council, 2020; NYC Food Policy, n.d.; Sudbury-Manitoulin Food Security Network, 2005). These assessments have been a valuable tool for understanding present challenges but also for providing direction for building

more equitable and sustainable food systems by developing democratic and inclusive processes for food systems governance.

In this article, we explore the experiences of two FPCs with developing community food systems report cards, in the Thunder Bay (Thunder Bay and Area Food Strategy [TBAFS], 2023) and Durham regions (Durham Food Policy Council [DFPC], 2024) of Ontario, Canada. This article was co-developed and co-written by the primary creators of the report cards through a collaborative reflection process that involved several discussions, autoethnographic writing, and collective analysis. We explore how the report cards were developed and distributed as well as their findings and impacts. We argue that FPC-led report card projects can help to identify a city-region food system's dynamics while tracking progress and gaps and acting as a communication tool for decision-makers, food systems stakeholders, and the community in general. However, report cards are only the starting point for advancing food sovereignty in city-regional food systems.

2. Context

To set the context for our exploration of community food systems report cards, this section provides an overview of food systems thinking, assessments and indicators, and FPCs as key actors related to this work.

2.1. Food Systems

Pervasive, yet simple food system definitions focused primarily on supply chains tend to obscure the actors, values, and power dynamics that impact and are impacted by food. Food spans multiple sectors (e.g., social relations, health, economic development, sustainability of farmland, forests, waterways, labour relations, etc.), making it difficult for it to fit comfortably in one government department or academic discipline (Barling et al., 2002; MacRae, 2011). However, lack of a comprehensive food systems approach contributes to fractured policy frameworks and an inability to address underlying challenges (e.g., social inequities, environmental exploitation). Conversely, MacRae and Donahue (2013) recommend a relational approach to food systems thinking, one that involves feedback loops connecting sectors, scales, and places through food-related activities. They write, "Food systems thinking reflects an awareness of how actions by one group in the system affect other groups, as well as affecting the environment, the economy, the fabric of society, and the health of the population, and ultimately consumers" (p. 2).

A city-region food systems approach grounds such relationality in place, emphasizing the links and dependencies between the urban, peri-urban, and rural (Blay-Palmer et al., 2018). City-region food systems represent "all the actors, processes and relationships that are involved in food production, processing, distribution, and consumption in a given city region" (FAO, 2025). In addition, FAO (2025) adds:

City region food systems are connected to many other rural and urban sectors (e.g., food security, economic development, water and waste management, energy, transport, health, climate change, governance and spatial planning, etc.). By taking this into account, economic, social, and environmental sustainability linkages can be acknowledged.

Urban food systems are inextricable from their surrounding regions (especially places where food is produced and harvested), and the city-region food systems concept emphasizes this connection.

Food systems definitions centring complexity and interdependence enable joined-up processes for advancing more equitable and sustainable food systems, those which provide the economic, social, and environmental foundations for all people now and in the future (Ericksen et al., 2010; FAO, 2018). They can also demarcate what is possible and point to the actions necessary for realizing such possibilities. In doing so, they call attention to the possibility of building more equitable and sustainable relationships among human and more-than-human worlds through supporting and sustaining food systems.

2.2. Assessments and Indicators

Understanding the realities of food systems in a particular region is essential for decision-making. Food systems assessments use a set of indicators as evidence to document the state of the system and to evaluate change over time. Blay-Palmer et al. (2020) note that indicators are gaining “importance at all scales for policymakers, researchers, and funders, with metrics seen as the way to benchmark, assess, and track food system sustainability from cities to the global scale” (p. 4). However, simply determining a set of relevant indicators and data sources can be a challenging process for FPCs and other groups trying to provide a comprehensive picture of their food systems (Atoloye et al., 2023). In other words, the complex nature of food systems can frustrate efforts to capture them through a set of indicators. When done well, assessments can provide a comprehensive overview of a food system at a given time in a particular place, enhance understanding of relevant issues, and enable comparisons over time and with other regions. As such, they can contribute to civil society action and informed decision-making related to policies and programs. In a discussion of the use of environmental assessments in the policy context, Bauler (2012) argues that indicators are valuable for evidence-based decision-making. He points to contributions of both an instrumental and conceptual use of information.

However, Bauler (2012) also argues that indicators are subject to the politics of their creators and users. Despite their potential, the development and use of food systems assessments runs the risk of reinforcing existing power dynamics. Assessments are not neutral and must be viewed within the context of the people, groups, and interests that created them along with how they are used and interpreted. For example, many assessments take an economic-centered approach that privileges profit-oriented values, regardless of the community and/or place (Levkoe & Blay-Palmer, 2018).

For many practitioners and decision-makers, accessing relevant, up-to-date data can be challenging. While some data are publicly accessible, others are more difficult to locate and acquire and may require specific training and resources to access and interpret. Thus, the identification of indicators may be shaped, in part, by limitations of the data availability (Atoloye et al., 2023; Olstad et al., 2014). For example, Battersby (2020) demonstrates the limited availability of appropriate municipal-level data in the development of a food systems study in South Africa. She argues that more scale-appropriate data are needed. Similarly, Levkoe and Blay-Palmer (2018) found that national level economic-related agricultural data about production and trade were abundant and widely available, yet information about community-based and Indigenous food systems was virtually absent. This incomplete information can mislead decision-makers and practitioners to focus on economic issues as opposed to social and environmental realities. Further, taking indicators in

isolation and out of context can lead to erroneous conclusions (Bauler, 2012; Tanguay et al., 2010). Spring et al. (2020) argue that more place-based comprehensive food systems measurements are required.

2.3. FPCs

The first FPC was set up in 1982 in Knoxville, Tennessee, and by 2023, over 300 operated across North America (Centre for a Livable Future, n.d.; Schiff et al., 2022). FPCs aim to support food systems through establishing connections across sectors within a particular community while advocating for policy change (Calancie et al., 2018; Schiff, 2008). Schiff et al. (2022) identify two characteristics that make FPCs different from other food-related organizations: “(1) their use of a cross-sectoral committee to guide decisions and activities; and (2) their use of a food systems approach” (p. 1). FPCs have increasingly adopted broad goals of food sovereignty that not only aim to make healthy and culturally appropriate food more available and accessible but also ensure that food is produced and harvested in sustainable and equitable ways (Bassarab et al., 2019; Harper et al., 2009; Levkoe & Sheedy, 2017; Moragues-Faus, 2017). A food sovereignty approach is particularly appropriate for FPCs because it focuses on peoples’ right to define and control their own food systems (La Via Campesina, n.d.; Wittman et al., 2010).

The expansion of FPCs constitutes an important approach to city-regional food systems governance. In general, FPCs draw on diverse, local expertise in facilitating the coordination of actions across food systems (Harper et al., 2009). In doing so, they take a food systems approach and respond to uneven power relations across issue areas. Their main roles are typically to offer a forum for actors across sectors to engage in dialogue, identify and advocate for changes in policy, and contribute to the development of programs and services (Harper et al., 2009; Schiff et al., 2022). Several studies have documented FPCs’ focus on policy-related work such as community consultations and advocating for progress on food-related issues (Blay-Palmer, 2009; Clark, 2018; Koski et al., 2018; Scherb et al., 2012). While FPCs can face challenges in securing representation from groups who are traditionally under-represented, their efforts to do so help to promote a more inclusive democratic approach to regional governance (Porter & Ashcraft, 2020), an essential element of food sovereignty.

In the following section, we explore the experiences of two communities in their development of community food systems report cards.

3. Thunder Bay and Durham Region

The province of Ontario, located in central Canada, is home to almost 40% of the country’s population (Statistics Canada, 2024), along with 133 First Nations with unique cultures and languages, representing 23% of the Indigenous population in Canada (Indigenous Services Canada, 2021).

Thunder Bay is a mid-sized city in Northwestern Ontario, situated on the north shore of Lake Superior on the traditional lands of Fort William First Nation, and is signatory to the Robinson Superior Treaty of 1850. It has a population of approximately 109,000 and serves as a regional hub for several rural municipalities and First Nations accessible by road as well as remote communities (Statistics Canada, 2023). The city is located within the census metropolitan area of Thunder Bay along with the municipalities of Oliver Paipooonge and Neebing, the townships of Shuniah, Conmee, O’Connor, and Gillies, and Fort William First Nation. Thunder

Bay's city-region food system faces significant challenges, including a short growing season with cold winters, moderate soil quality that limits agricultural opportunities, few markets for locally produced and harvested foods, and limited distribution lines leading to high transportation costs (Levkoe & Strutt, 2024). According to the most recent data from Public Health Ontario (2024), Thunder Bay's household food insecurity rate has remained consistent from 2019–2020 to 2021–2022 at 16.7%, a level in keeping with Ontario rates of 17.1% and 17.4% over this time. However, it is widely known that food insecurity numbers are significantly underreported (Livings et al., 2023). Moreover, Indigenous populations and other racialized people face significantly higher rates of food insecurity and have limited access to their traditional foodways (Dhunna & Tarasuk, 2021).

The Regional Municipality of Durham occupies the greatest area of any municipality in the Greater Toronto Area with 80% of it sitting within the provincially designated Greenbelt (Durham Region Planning and Economic Development Department, 2019). The region is situated on the territory of the Michi Saagiig Anishinaabeg, occupies a portion of the territory covered by the Williams Treaty, and is the home of the Mississaugas of Scugog Island First Nation. Services and responsibilities across the region are divided between the regional government and Durham's eight lower-tier municipalities (the Cities of Oshawa and Pickering, Towns of Ajax and Whitby, Townships of Brock, Scugog, and Uxbridge, and Municipality of Clarington). Durham constitutes a variety of natural, rural, peri-urban, and urban spaces, with most of its population residing in the south of the region near the north shore of Lake Ontario. Although 84% of the region's land is rural, 92% of its residents live in urban areas (Statistics Canada, 2022). Durham is a growing region, with the current population of 700,000 projected to reach approximately one million by 2041 (Invest Durham, n.d.). Durham contains the greatest total area of land in crops across the Greater Golden Horseshoe (31.2%), and the second-highest proportion of the total number of farms (23.6%; Durham Region Planning and Economic Development Department, 2019). Between 2018 and 2020, 15.5% of Durham residents experienced food insecurity (Durham Region Health Department, 2022). Today one-quarter of Durham households experience food insecurity (Durham Region Health Department, 2025).

Both regions have active FPCs that evolved to address opportunities and challenges in their respective food systems. The TBAFS is a FPC that was established in 2007 and played a central role in developing the Thunder Bay Food Charter that was endorsed by the City Council, the District Social Services Board, and 33 other governments, organizations, and businesses in 2008. TBAFS was officially endorsed by the City of Thunder Bay and five rural municipalities in 2014 (Levkoe et al., 2021). TBAFS receives core funding from the City of Thunder Bay. It is governed by an executive committee and employs a paid coordinator. TBAFS' executive committee is made up of individuals that represent organizations and institutions across the region's food system including representatives from the City of Thunder Bay, an Indigenous organization, a councillor from Fort William First Nation and one from the surrounding municipalities and townships. In addition, the executive committee includes representatives from key sectors including agriculture, health, education, research, business, and the social service sector. In early 2025, the TBAFS incorporated as an independent non-profit organization, renamed the Food Action Network of Northwestern Ontario. TBAFS created its first Community Food Security Report Card in 2015 and an updated version in 2023.

The DFPC was founded in 2010 with a mandate to advance the Durham Food Charter, a community-produced vision which was endorsed by the Durham Regional Council in 2009. DFPC is governed by a small stewardship committee that is comprised of volunteers who have put themselves

forward. It does not have seats designated for representatives of specific communities or sectors, and so, makes efforts to actively seek out input from those who are not represented on the committee, such as municipal and community organization advisors. DFPC receives no regular funding for its operations and has no paid staff. While DFPC invited input from Indigenous groups, the FPC's stewardship committee throughout the report card development process was composed of non-Indigenous women. Its inaugural report card was released in 2024.

4. Two Community Food Systems Report Cards

In this section, we bring Thunder Bay and Durham Region's experiences developing community food systems report cards into conversation by drawing out key themes from our collective reflections (see Table 1) that emerged from a series of discussions between representatives of the two FPCs.

Table 1. Comparing key themes among the Thunder Bay and Durham Region report cards.

Key Theme	Thunder Bay	Durham Region
Origins and Purpose	Developed as an assessment tool to make the food system visible and catalyze engagement in food system planning. Funded by federal and provincial government grants. Coordinated by TBAFS staff and executive members; support from postsecondary student.	Funded by federal and regional government and a regional community organization. Coordinated by DFPC members; support from a paid researcher and postsecondary students; guidance from regional municipal staff and community organization advisors.
Development Process	Information collected from online databases and sector-specific outreach. Structured around seven pillars identified through community consultation. Includes food system indicators, summaries, community stories, and digital vignettes.	Information collected from key informant interviews and publicly available databases and reports. Structured around the seven food sovereignty pillars. Includes food system indicators, summaries, and recommendations for action.
Distribution	Hosted on an interactive virtual platform and shared digitally as a 76-page document.	Shared digitally as a 90-page comprehensive report and 18-page summary document.
Impact	Serves as a tool for internal prioritizing and external programming, advocacy, and communication.	Serves as a tool for community awareness raising and in discussions with government and postsecondary administration to advance the development of a regional food system strategy.

4.1. Origins and Purpose

For both Thunder Bay and Durham Region, the idea of a food systems report card was envisioned as an assessment tool that would present an accessible and concise overview of the city-region food systems using data-based indicators. TBAFS created its first report card in 2015 and a second version in 2023 that included updated statistics and analysis, digital vignettes, and an interactive virtual platform. As part of its work to

actuate the Durham Region Food Charter, DFPC first recommended the development of a report card in a 2013 regional food system environmental scan report. The report card eventually developed out of a second environmental scan in 2021–2022 and was released in 2024. The overall purpose of both report cards was to make the food system visible and catalyze broader engagement and collaboration on city-region food system programming, planning, and advocacy.

To establish its first report card in 2015, TBAFS received funding from a provincial government grant. The process was managed internally by the paid coordinator, with support from the volunteer executive committee. The updated 2023 report card was funded by a federal government research grant and overseen by the TBAFS coordinator, and an advisory committee made up of volunteer executive members. A partnership with faculty and graduate students at Lakehead University played an important role in securing funding and research capacity. A community researcher was also hired to support the work. Dedicated funds for staff and resources made the project viable, though additional resources could have enhanced knowledge mobilization efforts.

To develop the Durham report card, DFPC members provided oversight and assistance to four graduate students from three universities who were key to researching report card models, planning consultations, conducting interviews, proposing indicators, collecting metrics, and designing the report card's structure. Two of these students were hired through a federal government grant, and Mitacs, with matching funding from the regional government. The other two students worked with DFPC to complete a project for academic credit. In addition, Feed the Need in Durham, a regional charity organization, contracted a DFPC member as a researcher to update the food system environmental scan. Though initially conceived as a separate project, this research yielded the information that populated the report card. DFPC members contributed much of the effort to advance the project.

4.2. Development Processes

The development of the Thunder Bay report card drew on statistical data from online databases (e.g., the regional public health unit, provincial government departments, Statistics Canada) complemented by sector-specific outreach to organizations and institutions. Indicators were collected and synthesized from reputable, publicly accessible sources specific to the region. TBAFS had built extensive networks across the region, facilitating data verification, additional data access, and qualitative insights.

In comparison to TBAFS, DFPC had less access to data and data verification due to having fewer direct contacts capable of providing these services. At the outset of the development of the Durham report card, the DFPC team invested significant effort into updating and expanding its contact list so that a wide range of food systems stakeholders could be consulted through online events, a consultation form, and a resident survey followed by key informant interviews. Much of the data for the report card was sourced from publicly available databases and reports (e.g., regional departments, provincial ministries, Statistics Canada, and non-profit organizations such as Food Secure Canada).

Both report cards were designed to provide a baseline for indicators that were structured around a set of key pillars. For Thunder Bay, seven pillars were developed through community consultations; and in Durham Region, the seven pillars of food sovereignty (Food Secure Canada, n.d.) were adopted, and community

consultations were held to determine the report card's design (see Table 2). Both report cards included food systems indicators, measurements, and a summary of observations on what these indicators revealed. DFPC's report card included recommendations for strengthening the data landscape and for action. The TBAFS report card also featured community stories and digital vignettes highlighting local case studies.

Thunder Bay's report card used 119 indicators that were determined by the project team to be reflective of the regional food system, reliable and accessible to the public, replicable over time, and easily understood. Divided into seven chapters that reflect the pillars, the report card was designed to present information that paints a picture of Thunder Bay's progress towards food sovereignty. Each chapter begins with an introductory section that provides context for the indicators, reflections and comments on what the indicators mean, and highlights of initiatives taking place in the community. Durham's indicators act as the report's sub-sections organized around the seven pillars. Indicators were chosen to identify progress on each of the pillars rather than specific data points. This process drew on regionally representative data found in databases, existing research reports, and records that were free and available to the public and collected using sound research methods. This approach facilitated the incorporation of quantitative and qualitative information along with discussion of the region's overall information environment, including gaps in data. Data relevant to each indicator were presented as metrics, with each section including data that were desired but not available. The TBAFS report card did not make explicit recommendations or issue specific calls to action while the DFPC report card includes recommendations for actions that would improve the informational environment and initiatives to advance food sovereignty. These recommendations reflect the opinions that DFPC members themselves developed while compiling the report card. DFPC had conducted a survey and gathered other community input to ground its findings in the broader community's experience, but ultimately it was DFPC itself who decided what to single out as recommendations.

Both FPCs found gaps in available data as well as gaps in representation from specific food systems sectors. For both TBAFS and DFPC, resource and capacity constraints also led to gaps in data collection. Many of the findings that emerged from the DFPC report card pertained to the landscape of available data, such as a lack of information regarding land trusts, environmental impacts of food production, the location of all direct-sale food producers, and the demographics and welfare of food systems workers. Some other marked findings concerned the growing size but diminishing number of farms, the lack of succession planning by most Durham farms, and sharp increases in food bank and emergency meal program usage. The findings from the TBAFS report card presented a picture of growing inflation and the rising costs of food, housing, and transportation, leading to more people struggling to put enough food on the table, the integral nature of forest and freshwater foods to the city-region's food system, institutional procurement of local food driven

Table 2. Report card pillars.

Thunder Bay	Durham Region
Food Access	Food for People
Forest and Freshwater Foods	Values Food Providers
Food Infrastructure	Works with Nature
Food Procurement	Localizes Food Systems
Food Production	Puts Control Locally
School Food Environments	Builds Knowledge and Skills
Urban Agriculture	Food Is Sacred

by the City of Thunder Bay, and the development of culinary programs to build student food literacy skills. The report card also highlighted promising initiatives like the creation and implementation of a dignified food access guide by a non-profit organization, the expansion of student nutrition programs, growth of the Thunder Bay Good Food Box, collaboration among seed producers to provide locally adapted, open-pollinated seeds, the development of an online local food directory, and accessible resources for learning about Indigenous food systems.

4.3. Distribution

Thunder Bay's 2023 report card was housed on its own website as an interactive online platform that enabled users to navigate through the different indicators or read one chapter at a time. The report card also included digital vignettes of community projects in each chapter and several infographics. A 76-page version of the report card along with the original 2015 version are both available digitally for download. In January of 2023, a press conference was held at Thunder Bay City Hall to announce its release and it was reported by several regional media outlets. Announcements and links to the report card were also sent to all members of TBAFS to use and share within their networks. Hiring a community researcher with graphic and website design experience was instrumental in creating an interactive report card. DFPC produced two digital downloadable versions of its report card. The first was a 90-page comprehensive document that included background, context, and analysis. The second was an 18-page condensed version focusing on key data for each pillar. Both documents were posted on DFPC's website, circulated to its stakeholder list, and provided in hard copy to key employees of the regional municipality. Funding initially intended for a launch event was diverted to increase the compensation offered to the graphic designer whose scope of work had exceeded DFPC's initial expectations.

4.4. Impacts

Both report cards serve as essential tools to raise awareness about critical food systems issues. TBAFS used its data as the basis for programming, advocacy, and communication to encourage and support food systems stakeholders to get involved in shaping regional food systems priorities and driving actionable initiatives. Feedback from users was very positive and the resulting data have been used as a reference point for the city, researchers, practitioners, surrounding municipalities, and First Nations in their efforts to build a more equitable and sustainable food system (Ghorbankhani, 2023). The report card has also played a crucial role in determining TBAFS' strategic priorities and guiding implementation activities.

Durham Region's report card has also been praised by food systems stakeholders, but it remains to be seen whether its recommendations will be taken up and how actors beyond DFPC will make use of it. DFPC has used the report card as the basis for presentations in meetings with government advisory committees and government representatives and as a key strategic tool to coordinate the development of a regional food system strategy with clear actions.

Moving forward, TBAFS is focused on knowledge mobilization and developing collaborative actionable steps based on insights from its report card and input from community members in the region. There are also plans to develop calls to action and update the report card every five years. DFPC hopes to create updated iterations of its report card, a process that will necessitate increased engagement and cross-sector

collaboration. At this point, DFPC is actively exploring support to develop a comprehensive food systems strategy based on information from the report card.

5. Discussion

As place-based, intersectoral organizations, FPCs are well-positioned to coordinate the development of regional food systems report cards. The experiences of Thunder Bay and Durham Region show that these report cards can serve as a useful starting point for FPCs to provide: baseline information to document the state of a food systems with regionally specific indicators; visibility of multiple dimensions of the food system; indications of progress over time; and a catalyst for action. They can be of value to community members, food systems stakeholders, and decision-makers to understand the dynamics of the city-region food system, acting as a living document and basis for ongoing engagement and understanding. The process of developing report cards can also connect people and establish more democratic governance processes. In addition, they can inform research, advocacy, decision-making, and program planning, and can be used as the basis for shaping regional food strategies. In this way, report cards are not only a valuable knowledge product but are also part of a broader process that can build more equitable, healthy, and sustainable food systems.

Report card products and processes have the potential to contribute to advancing food sovereignty. By applying a systems approach to considering regional food landscapes, FPCs help ensure that diverse issues, actors, and perspectives are brought into conversation, thus strengthening conditions for collective, evidence-based, and democratic goal-setting and problem-solving. Consistent with the literature, our findings demonstrate that FPCs can use report cards to present a more complex picture of what a city-region food system looks like and opportunities for action, thereby avoiding fractured policy frameworks and an inability to address underlying challenges. This is particularly relevant for food sovereignty efforts that aim to put decision-making control in the hands of food producers, harvesters, workers across the food chain and eaters (La Via Campesina, n.d.; Wittman et al., 2010). However, as Porter and Ashcraft (2020) determined, attaining broad representation can pose challenges for FPCs. Both TBAFS and DFPC discovered this challenge to be partly rooted in a lack of available data. For example, DFPC was not able to speak broadly to the presence or experiences of racialized, immigrant, or queer farmers because its sole source for farmer demographics, Statistics Canada's Census of Agriculture, only reported on age and sex of farm operators. However, by structuring their work around the goals of food sovereignty, DFPC and TBAFS specifically, and FPCs more generally, centre their communities' right to determine and control their own food systems, thus maintaining the aspiration of broad-based transformation.

Although it can be difficult to adequately resource the development of report cards, the experiences of Thunder Bay and Durham Region show that it is possible for relatively small, grassroots FPCs to mobilize the necessary resources to complete this type of project with few funds. Beyond capacity challenges, there may also be limitations on data availability and potential impact. Not only are there challenges to gathering accessible, reliable, and relevant data, but the data themselves may only represent a point in time and cannot speak to the full complexity of a food system. Even a comprehensive report card can be difficult to engage with and interpret (e.g., too much information and data), may have limited impact on policy and decision-making, or be challenging to replicate in the future. These findings are consistent with the literature that suggests assessments and indicators can be valuable but have limitations due to what data are available and the ability to present them in a complex way (Atoloye et al., 2023).

Reflections on developing report cards in Thunder Bay and Durham elicited several insights about the process. First, the development of a food systems report card should begin with a strong foundation. This includes meaningful cross-sectoral relationships which are often key to accessing, validating, and contextualizing the data. Although network development will likely continue throughout the project, it should also be seen as a precursor to data collection. As such, it is well worth the energy to pull together contributors and users early on in the process. In addition, it is important to consider the structure and dissemination of the report card early in the development process through consultations with community members, decision-makers, and other stakeholders.

Because embarking on the development of a food systems report card is a significant investment of time and energy, it is beneficial to secure funding, community support, and paid staff (e.g., coordinators and researchers). This can reduce having to make compromises and relying on volunteer labour. Being realistic about the amount of time the team is able to dedicate to the project is worthwhile. In retrospect, the research planning could have made more deliberate decisions about determining phases for deciding what to measure and how data will be collected. It is important to be prepared for the challenges of collecting a comprehensive dataset. Even when data are available, it is valuable not to overwhelm users. Report cards need to prioritize what they include and consider how it is presented. Determining a set of relevant indicators and data sources can be a challenging process for FPCs and other groups trying to provide a comprehensive picture of their food systems (Atoloye et al., 2023).

Having a clear vision of the report card's purpose, how it would be used, and therefore its scope was an essential starting point. Consistent with Atoloye et al. (2023), TBAFS and DFPC both found that finalizing a comprehensive but not overwhelming set of indicators, especially given the limits of available data, can be a challenging process. Nonetheless, both FPCs agreed that it is better to be missing some desired information or to add in some unexpected information than to do the data collection without having a solid plan. Report cards should be understood as part of a process of increasing participation in FPCs by bringing in new people and groups that may not initially see themselves as part of a food system. This finding is consistent with literature that proposes that a city-region food systems approach can delineate the interdependencies of already interconnected geographies (Blay-Palmer et al., 2018) and a relational approach to food systems thinking that makes explicit connections among sectors, scales, and places through food-related activities (MacRae & Donahue, 2013).

Finally, since numbers are not neutral, it is important to present the data in context. Moreover, additional effort could have been made to consider framing or subsequent action items and political advocacy (e.g., assigning evaluative grades, providing commentary, including calls to action, etc.). The constitution of the research team along with the motivations, approach, structure, and ideology of the FPC inevitably shaped how the report card was constructed, organized, and disseminated. To advance food sovereignty, report cards can be a valuable tool but are only a starting point that must be followed with action.

6. Conclusion

Community food systems report cards are a valuable tool that provide a snapshot of a regional food system, establish benchmarks, and show the extent of change over time. Moreover, the process of developing a report card can be a valuable community-building initiative to expand networks and impact city-region food systems.

However, report cards are limited by the data available and the ability to pull information together, represent it in an accessible way, and disseminate it to users. Despite the effort to provide a comprehensive picture of a food system, it is challenging to capture the complexity, and report cards can only represent a point in time. While community food systems report cards are important, they are highly influenced by the individuals and organizations that develop them and the context under which they are created. Overall, through sharing the experiences of Thunder Bay and Durham Region, we suggest that developing community food systems report cards is an important step for advancing food sovereignty in city-region food systems.

Acknowledgments

We greatly appreciate the research and development support of the Thunder Bay Community Food Systems Report Card from Maliheh Ghorbankhani, Kendal Donahue, Raili Roy, Sarah Siska, Rebecca Schiff, and Ambili Rajan. We also acknowledge the work of Jenelle Regnier-Davies, Emma Wood, and Derek Chung for their contributions to the Durham Food Systems Report Card project, and all researchers, community reviewers, and advisors.

Funding

We acknowledge funding for this research from the Social Sciences and Humanities Research Council of Canada, Mitacs, the Province of Ontario, the Region of Durham, and Feed the Need in Durham.

Conflict of Interests

Karen Kerk was employed as the coordinator of the Thunder Bay and Area Food Strategy from 2018–2023. Francesca Hannan was employed as a contractor with the Durham Food Policy Council from 2021–2022 and has been a member since 2019. Charles Levkoe served as chair of the Thunder Bay and Area Food Strategy from 2018–2025. Mary Anne Martin served on the Durham Food Policy Council stewardship committee from 2017–2024 and is now a DFPC advisor.

References

- Atoloye, A., Schouboe, S., Misiaszek, C., Harding, J., Stowers, K. C., Bassarab, K., & Calancie, L. (2023). Developing a food system indicators database to facilitate local food systems assessments: Using a scoping review approach. *Journal of Agriculture, Food Systems, and Community Development*, 13(1), 99–112. <https://doi.org/10.5304/jafscd.2023.131.008>
- Barling, D., Lang, T., & Caraher, M. (2002). Joined-up food policy? The trials of governance, public policy and the food system. *Social Policy and Administration*, 36(6), 556–574. <https://doi.org/10.1111/1467-9515.t01-1-00304>
- Bassarab, K., Santo, R., & Palmer, A. (2019). *Food policy council report 2018*. Johns Hopkins Center for a Livable Future.
- Battersby, J. (2020). Data gaps and the politics of data: Generating appropriate data for food system assessment in Cape Town, South Africa. In A. Blay-Palmer, D. Conaré, K. Meter, A. Di Battista, & C. Johnston (Eds.), *Sustainable food system assessment: Lessons from global practice* (pp. 93–110). Routledge.
- Bauler, T. (2012). An analytical framework to discuss the usability of (environmental) indicators for policy. *Ecological Indicators*, 17, 38–45. <https://doi.org/10.1016/j.ecolind.2011.05.013>
- Beatrice, A. B., Elizabeth, M., Meaghan, R. B., Lynn, R., & Rebecca, T. (2017). The Ontario Food and Nutrition Strategy: Identifying indicators of food access and food literacy for early monitoring of the food environment. *Health Promotion and Chronic Disease Prevention in Canada: Research, Policy and Practice*, 37(9), 313–319.

- Bell, S., & Morse, S. (2011). An analysis of the factors influencing the use of indicators in the European Union. *Local Environment*, 16(3), 281–302. <https://doi.org/10.1080/13549839.2011.566851>
- Blay-Palmer, A. (2009). The Canadian pioneer: The genesis of urban food policy in Toronto. *International Planning Studies*, 14(4), 401–416. <https://doi.org/10.1080/13563471003642837>
- Blay-Palmer, A., Conaré, D., Meter, K., & Di Battista, A. (2020). Sustainable food system assessment: Lessons from global practice. In A. Blay-Palmer, D. Conaré, K. Meter, A. Di Battista, & C. Johnston (Eds.), *Sustainable food system assessment: Lessons from global practice* (pp. 1–16). Routledge.
- Blay-Palmer, A., Santini, G., Dubbeling, M., Renting, H., Taguchi, M., & Giordano, T. (2018). Validating the city region food system approach: Enacting inclusive, transformational city region food systems. *Sustainability*, 10(5), Article 1680.
- Calancie, L., Cooksey-Stowers, K., Palmer, A., Frost, N., Calhoun, H., Piner, A., & Webb, K. (2018). Toward a community impact assessment for food policy councils: Identifying potential impact domains. *Journal of Agriculture, Food Systems, and Community Development*, 8(3), 123–136. <https://doi.org/10.5304/jafscd.2018.083.001>
- Centre for a Livable Future. (n.d.). *Councils*. <https://www.foodpolicynetworks.org/councils/directory/online/index.html>
- Clark, J. (2018). From civic group to advocacy coalition: Using a food policy audit as a tool for change. *Journal of Agriculture, Food Systems, and Community Development*, 8(1), 21–38. <https://doi.org/10.5304/jafscd.2018.081.004>
- Dhunna, S., & Tarasuk, V. (2021). Black–white racial disparities in household food insecurity from 2005 to 2014, Canada. *Canadian Journal of Public Health*, 112, 888–902. <https://doi.org/10.17269/s41997-021-00539-y>
- Durham Food Policy Council. (2024). *The Durham Food System Report Card*. <https://www.durhamfoodpolicycouncil.com/thedurhamfoodsystemreport2024>
- Durham Region Health Department. (2022). *The price of eating well in Durham Region 2023*. <https://www.durham.ca/en/health-and-wellness/resources/Documents/HealthyLiving/PriceOfEatingWellInDurham.pdf>
- Durham Region Health Department. (2025). *Food insecurity*. <https://www.durham.ca/en/health-and-wellness/food-poverty.aspx>
- Durham Region Planning and Economic Development Department. (2019). *Envision Durham—Agriculture and rural system discussion paper*. <https://www.durham.ca/en/doing-business/resources/Documents/PlanningandDevelopment/Envision-Durham/2019-P-12-Envision-Durham-Discussion-Paper-Ag-Rural-System.pdf>
- Ellsworth, S., & Feenstra, G. (2010). Assessing the San Diego County food system: Indicators for a more food secure future. San Diego Food System; UC Sustainable Agriculture Research and Education Program; UC Davis Agricultural Sustainability Institute. <https://sarep.ucdavis.edu/sites/g/files/dgvnsk5751/files/inline-files/SDCountyFoodshedAssessment2010.pdf>
- Ericksen, P., Stewart, B., Dixon, J., Barling, D., Loring, P., Anderson, M., & Ingram, J. (2010). The value of a food system approach. In J. Ingram, P. Ericksen, & D. Liverman (Eds.), *Food security and global environmental change* (pp. 25–45). Routledge.
- European Coordination Via Campesina. (2024). *Food sovereignty*. <https://www.eurovia.org/our-vision>
- FAO. (2018). *Sustainable food systems: Concept and framework*. <https://openknowledge.fao.org/server/api/core/bitstreams/b620989c-407b-4caf-a152-f790f55fec71/content>
- FAO. (2025). *The CRFS approach*. <https://www.fao.org/in-action/food-for-cities-programme/overview/crfs/en>

- Food Secure Canada. (n.d.). *What is food sovereignty*. <https://www2.foodsecurecanada.org/who-we-are/what-food-sovereignty>
- Freudenberg, N., Willingham, C., & Cohen, N. (2018). The role of metrics in food policy: Lessons from a decade of experience in New York City. *Journal of Agriculture, Food Systems, and Community Development*, 8(B), 191–209. <https://doi.org/10.5304/jafscd.2018.08B.009>
- Ghorbankhani, M. (2023). *Exploring food system assessments as a contribution to sustainability and equity: A case study of the Thunder Bay + area food strategy community food system report card* [Unpublished master's thesis]. Lakehead University. <https://knowledgecommons.lakeheadu.ca/handle/2453/5284>
- Harper, A., Shattuck, A., Holt-Giménez, E., Alkon, A., & Lambrick, F. (2009). *Food policy councils: Lessons learned*. Food First Institute for Food and Development Policy. <https://archive.foodfirst.org/publication/food-policy-councils-lessons-learned>
- Hezri, A., & Dovers, S. (2006). Sustainability indicators, policy and governance: Issues for ecological economics. *Ecological Economics*, 60(1), 86–99. <https://doi.org/10.1016/j.ecolecon.2005.11.019>
- Indigenous Services Canada. (2021). *Indigenous communities in Ontario*. <https://www.sac-isc.gc.ca/eng/1603371542837/1603371807037>
- Invest Durham. (n.d.). *Demographics and statistics*. <https://www.durham.ca/en/economic-development/invest-and-grow/demographics-and-statistics.aspx>
- Koski, C., Siddiki, S., Sadiq, A. A., & Carboni, J. (2018). Representation in collaborative governance: A case study of a food policy council. *American Review of Public Administration*, 48(4), 359–373. <https://doi.org/10.1177/0275074016678683>
- La Via Campesina. (n.d.). *What is food sovereignty?* <https://viacampesina.org/en/what-is-food-sovereignty>
- Lang, T., Barling, D., & Caraher, M. (2009). *Food policy: Integrating health, environment and society*. Oxford University Press.
- Le Vallée, J.-C., & Grant, M. (2016). *Canada's food report card 2015: International comparison*. The Conference Board of Canada.
- Levkoe, C. Z., & Blay-Palmer, A. (2018). Food counts: Food systems report cards, food sovereignty and the politics of indicators. *Canadian Food Studies/La Revue canadienne des études sur l'alimentation*, 5(3), 49–75. <https://doi.org/10.15353/cfs-rcea.v5i3.277>
- Levkoe, C. Z., Schiff, R., Arnold, K., Wilkinson, A., & Kerk, K. (2021). Mapping food policy groups: Understanding cross-sectoral network building through social network analysis. *Canadian Food Studies/La Revue canadienne des études sur l'alimentation*, 8(2), 48–79. <https://doi.org/10.15353/cfs-rcea.v8i2.443>
- Levkoe, C. Z., & Sheedy, A. (2017). A people-centred approach to food policy making: Lessons from Canada's People's Food Policy project. *Journal of Hunger & Environmental Nutrition*, 14(3), 318–338. <https://doi.org/10.1080/19320248.2017.1407724>
- Levkoe, C. Z., & Strutt, C. (2024). Creating a municipal level emergency food plan: Lessons from Thunder Bay, Ontario. *Journal of Agriculture, Food Systems, and Community Development*, 13(4), 19–34. <https://doi.org/10.5304/jafscd.2024.134.016>
- Livingston, M. S., Bruine de Bruin, W., Wilson, J. P., Lee, B. Y., Xu, M., Frazzini, A., Chandra, S., Weber, K., Babboni, M., & de la Haye, K. (2023). Food insecurity is under-reported in surveys that ask about the past year. *American Journal of Preventive Medicine*, 65(4), 657–666. <https://doi.org/10.1016/j.amepre.2023.03.022>
- Los Angeles Food Policy Council. (2020). *Food system dashboard*. <https://www.goodfoodla.org/blog/food-system-dashboard>
- MacRae, R. (2011). A joined-up food policy for Canada. *Journal of Hunger & Environmental Nutrition*, 6(4), 424–457. <https://doi.org/10.1080/19320248.2011.627297>

- MacRae, R., & Donahue, K. (2013). *Municipal food policy entrepreneurs: A preliminary analysis of how Canadian cities and regional districts are involved in food system change*. Toronto Food Policy Council; Vancouver Food Policy Council; Canadian Agri-Food Policy Institute.
- Maynard, M., Lahey, D., & Abraham, A. (2018). *Campus food report card: The state of food on Ontario university campuses*. Meal Exchange. https://d3n8a8pro7vhmx.cloudfront.net/greenbeltfund/pages/3091/attachments/original/1556644782/Campus_Food_Report_Card_-_Local_Food_Release.pdf?1556644782
- Moragues-Faus, A. (2017). Urban food policy alliances as paths to food sovereignty? Insights from sustainable food cities in the UK. In A. A. Desmarais, P. Claeys, & A. Trauger (Eds.), *Public policies for food sovereignty* (pp. 145–163). Routledge.
- NYC Food Policy. (n.d.). *Food metrics report*. <https://www1.nyc.gov/site/foodpolicy/reports-and-data/food-metrics-report.page>
- Olstad, D. L., Raine, K. D., & Nykiforuk, C. I. J. (2014). Development of a report card on healthy food environments and nutrition for children in Canada. *Preventive Medicine*, 69, 287–295. <https://doi.org/10.1016/j.ypmed.2014.10.023>
- Porter, C. A., & Ashcraft, C. M. (2020). New England food policy councils: An assessment of organizational structure, policy priorities and public. *Elementa: Science of the Anthropocene*, 8, Article 39. <https://doi.org/10.1525/elementa.436>
- Public Health Ontario. (2024). *Quick reference guide: Health equity snapshots*. King's Printer for Ontario.
- Scherb, A., Palmer, A., Frattaroli, S., & Pollack, K. (2012). Exploring food system policy: A survey of food policy councils in the United States. *Journal of Agriculture, Food Systems, and Community Development*, 2(4), 3–14. <https://doi.org/10.5304/jafscd.2012.024.007>
- Schiff, R. (2008). The role of food policy councils in developing sustainable food systems. *Journal of Hunger & Environmental Nutrition*, 3(2/3), 206–228. <https://doi.org/10.1080/19320240802244017>
- Schiff, R., Levkoe, C. Z., & Wilkinson, A. (2022). Food policy councils: A 20-year scoping review (1999–2019). *Frontiers in Sustainable Food Systems*, 6, Article 868995. <https://doi.org/10.3389/fsufs.2022.868995>
- Spring, A., Skinner, K., Simba, M., Nelson, E., Baltzer, J., Swanson, H., & Turetsky, M. (2020). Taking care of the land: An interdisciplinary approach to community-based food systems assessment in Kakisa, Northwest Territories, Canada. In A. Blay-Palmer, D. Conaré, K. Meter, A. Di Battista, & C. Johnston (Eds.), *Sustainable food system assessment: Lessons from global practice* (pp. 42–65). Routledge.
- Statistics Canada. (2022). *Population counts, population centre size groups and rural areas* (Table 98-10-0008-01) [Data set]. <https://doi.org/10.25318/9810000801-eng>
- Statistics Canada. (2023). *Census profile, 2021 census of population* (Catalogue no. 98-316-X2021001) [Data set]. <https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/index.cfm?Lang=E>
- Statistics Canada. (2024). *Population estimates, quarterly* (Table 17-10-0009-01) [Data set]. <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1710000901>
- Sudbury-Manitoulin Food Security Network. (2005). *Community food security indicators report card*. City of Greater Sudbury.
- Tanguay, G. A., Rajaonson, J., Lefebvre, J.-F., & Lanoie, P. (2010). Measuring the sustainability of cities: An analysis of the use of local indicators. *Ecological Indicators*, 10(2), 407–418. <https://doi.org/10.1016/j.ecolind.2009.07.013>
- Thunder Bay and Area Food Strategy. (2023). *Thunder Bay and Area Food Strategy community food system report card*. <https://foodsystemreportcard.ca>
- Wittman, H., Desmarais, A., & Wiebe, N. (2010). *Food sovereignty: Reconnecting food, nature and community*. Fernwood Press.

About the Authors



Charles Z. Levkoe is the Canada Research Chair in Equitable and Sustainable Food Systems, a member of the College of New Scholars, Artists and Scientists of the Royal Society of Canada, and a professor in the Department of Health Sciences at Lakehead University. His community-engaged research uses a food systems lens to explore connections between social justice, ecological regeneration, regional economies, and democratic engagement. <https://foodsystems.lakeheadu.ca>



Mary Anne Martin has served on the Durham Food Policy Council (DFPC) from 2017 to 2024 and now acts as a community advisor for the DFPC. As a research associate at Trent University's Research for Social Change Lab and a sessional instructor at Trent School of the Environment, Mary Anne focuses on the influences of policies and programs on people's day-to-day lives, especially with regard to household food insecurity, homelessness, poverty, social divisions of caring labour, the wellbeing of food systems, and the outcomes of community-based food initiatives. She holds a PhD in Canadian Studies from Trent University.



Karen Kerk, as the former coordinator of the Thunder Bay and Area Food Strategy (2018–2023), was instrumental in coordinating community efforts to promote a sustainable and equitable food system. In her current role as CityStudio coordinator at the City of Thunder Bay, Karen facilitates experiential learning projects that connect classroom learning with practical municipal challenges, enhancing student skills and benefitting the broader community.



Francesca Hannan is a member of the Durham Food Policy Council and one of the primary authors of the Durham Food Systems Report Card. She has worked with other local organizations including Green Jobs Oshawa and the Rescue Lake Simcoe Coalition as a researcher, writer, and public speaker. She holds a BA in Economics, Environmental Studies, and Environmental Geography from the University of Toronto.

Rethinking Urban Food Systems in Nairobi: Embracing Local Context for Sustainable Transformation

Linda Hering  and Alexander Kohrs 

Department of Geography, Humboldt University of Berlin, Germany

Correspondence: Linda Hering (linda.hering@hu-berlin.de)

Submitted: 23 October 2024 **Accepted:** 16 June 2025 **Published:** 12 August 2025

Issue: This article is part of the issue “Perspectives on Food in the Sustainable City” edited by Birgit Hoinle (University of Hohenheim), Alena Birnbaum (University of Kassel), and Petra Lütke (University of Münster), fully open access at <https://doi.org/10.17645/up.i395>

Abstract

Urban food systems are crucial for addressing sustainability, equity, and resilience, especially in rapidly growing cities of the Global South. Yet, urban planners have long neglected them. In Nairobi, where up to 60% of residents live in informal settlements and many spend over half their income on food, the food system remains fragmented despite extensive interventions. Drawing on research in Kasarani, a constituency of Nairobi, this article explores how residents navigate and use the social, economic, and infrastructural dynamics of their neighborhoods to secure food and their livelihoods. We show that policy approaches centered on formalization and large-scale projects often ignore the value of everyday practices and local networks. Informal actors, such as *mama mbogas* (fresh produce traders), are vital for food security and community resilience. We advocate for urban food governance that embraces the coexistence of on- and off-grid systems and recognizes informal economies as central to urban resilience. By emphasizing residents' lived experiences, we highlight pathways for more inclusive and transformative urban food planning.

Keywords

governance; local context; peri-urban development; sustainable transformation; urban food systems

1. Introduction

Urban development is intrinsically linked to food systems, which shape consumption, waste management, and interactions with other infrastructures such as energy and housing (Steel, 2013). Despite widespread recognition of the importance of urban food systems research, these systems are generally considered to be unsustainable, leading to urgent calls for their transformation. Furthermore, recent crises have raised political interest in transforming food systems, with sustainability and resilience as key objectives (von Braun et al.,

2023). Ideally, sustainable food systems take into account social equity, environmental integrity, and economic justice (Blay-Palmer, 2010). A definition of sustainable food systems is provided by Hendriks et al. (2023, p. 38):

Productive and prosperous (to ensure the availability of sufficient food); equitable and inclusive (to ensure access for all people to food and to livelihoods within that system); empowering and respectful (to ensure agency for all people and groups, including those who are most vulnerable and marginalized to make choices and exercise voice in shaping that system); resilient (to ensure stability in the face of shocks and crises); regenerative (to ensure sustainability in all its dimensions); and healthy and nutritious (to ensure nutrient uptake and utilization).

This broad definition extends beyond food security to include regenerative capacity and the agency of all actors involved.

In sub-Saharan Africa (SSA), urban food systems are crucial not only for food security—defined by availability, access, utilization, and stability—but also as major sources of employment and income (Resnick & Swinnen, 2024). In Nairobi, over half the population faces food insecurity, with two million residents spending more than half their income on food (Owuor, 2019). Vulnerable groups such as women, children, the elderly, and people with disabilities are particularly affected. Colonial legacies still shape Nairobi's urban landscape through segregation and gating practices, leaving the city materially, socially, and politically fragmented (Owuor & Mbatia, 2012). Though semi-autonomous, these fragments result in uneven development across the city. Structural issues, such as low incomes, food losses from technological gaps, and middleman-driven price increases, exacerbate the situation (Owuor et al., 2017). Rapid urbanization intensifies challenges related to soil sealing, the loss of agricultural land, river pollution, and waste crises (Nairobi City County, 2022), with peripheral areas suffering most due to inadequate infrastructure and mounting settlement pressure. Transforming Nairobi's food system to ensure greater effectiveness, equity, and environmental sustainability is essential.

Unlike gradual change, transformation is driven by specific intentions and goals. Sonnino (2023, p. 1) defines food system transformation as a “fundamental change in the structural, functional, and relational aspects of the food system that leads to new patterns of interactions and outcomes.” Such transformation requires the comprehensive restructuring of the food system and its interdependencies with other urban systems. However, conflicting priorities among stakeholders—NGOs, multinational corporations, traditional leaders, and civil society organizations—often result in power struggles (Pfister et al., 2016; Smit, 2016). Central debates revolve around whether environmental sustainability, social equity, or economic growth should take precedence, underscoring the need for policymaking informed by research, grassroots perspectives, and inclusive stakeholder engagement. Moreover, top-down urban development projects, such as large-scale infrastructure projects (K'Akumu & Gateri, 2022), often pursue different logics, prioritizing connectivity for goods, people, and services over environmental protection or community welfare.

In response, new theoretical perspectives have emerged that highlight the interdependencies between infrastructure, urban governance, and food systems. These approaches stress that:

Urban food systems cannot...be theorised and studied as separate from urban systems because a lack of understanding of the realities facing urban dwellers and urban systems will only lead to

maladaptive policies, including those that criminalise existing coping strategies and ways of living which do not conform to a planned ideal. (Living Off-Grid Food and Infrastructure Collaboration [LOGIC] et al., 2024, p. 438)

Drawing on urban studies, the LOGIC introduces the concept of infrastructure assemblage—socio-material configurations linking people, ideas, and objects (LOGIC et al., 2024, p. 441)—to analyze urban food systems. This perspective shows how urban populations rely on both on- and off-grid infrastructures, offering insights for local authorities to move beyond rigid planning and engage more effectively with community-driven practices (LOGIC et al., 2024, pp. 443–444). Inspired by assemblage theory, we adopt McFarlane’s (2021) view of urban contexts as compositions of fragments—“bits and pieces” (p. 4) that shape cities materially, socially, and spatially. Our focus lies on locally specific socio-material arrangements shaped by social, economic, and infrastructural conditions that enable food trade and consumption. Building on these theoretical insights and our empirical data, we advocate recognizing local specificities, particularly social, economic, and infrastructural characteristics, as key factors in shaping urban food systems. This raises two guiding questions: How are these characteristics formed, and how can they support sustainable food system transformation? To address these questions, this article is structured as follows: (a) We begin with an overview of existing research on urban food system governance and transformation, particularly in SSA; (b) we then examine our own empirical data on the everyday practices of residents living, working, and eating in Kasarani, a northeastern Nairobi neighborhood, to illustrate the locally specific interplay of social, economic, and infrastructural factors—highlighting the crucial role of informality in enabling sustainable transformation; and (c) finally, we apply our analytical framework to show how a deeper understanding of local contexts can guide more inclusive policy interventions, beyond formalization efforts.

2. Navigating Sustainability, Governance, and Informality in Urban Food Systems of SSA

From a policy perspective, designing, implementing, and monitoring sustainability policies and strategies poses a major challenge, especially given the unequal power relations both at the global level and within nations (Lawrence et al., 2015). To date, academic and policy discussions on the transformation of urban food systems have been primarily restricted to the macro level, supported by limited empirical evidence (Sonnino, 2023). A review of the literature highlights structural differences between urban spaces that we believe are essential to consider when implementing sustainable characteristics (LOGIC et al., 2024; Owuor et al., 2017).

2.1. Contested Dimensions of Sustainability in Urban Food Systems

Sustainability rests on three key dimensions: social, environmental, and economic. Sustainable economic development meets present needs without compromising those of future generations; social equity safeguards rights, health, culture, and social norms; and environmental sustainability protects natural resources to ensure long-term productivity (Magidi, 2022). In the context of food and nutrition, social justice is critical as food insecurity is closely linked to income levels (Resnick & Swinnen, 2024). Economic sustainability in SSA requires recognizing informal work as essential, while environmental sustainability must respond to the effects of fragmented urban development, including informal settlements, inadequate infrastructure, and environmental degradation.

These dimensions are often contested among stakeholders operating at different action levels, and sustainability in one area can lead to unintended, unsustainable consequences in another (Pfister et al., 2016). Critics argue that contemporary food systems harm both human and planetary health (Sonnino, 2023) and that ecological sustainability efforts, shaped by modern capitalist agendas, can exacerbate social inequalities (Neckel, 2017). However, especially in studies from the Global North, there is evidence that local food movements operate at the local level in response to government inaction, which is often attributed to the influence of neoliberal urban regimes (Birnbaum & Lütke, 2023).

Urban food systems are increasingly shaped by translocal dynamics. Initiatives like the Milan Urban Food Policy Pact promote global cooperation and local action through knowledge sharing and multi-level governance (Moragues-Faus & Sonnino, 2018). As a signatory, Nairobi launched its Urban Food System Strategy (NUFSS) in 2022 (Nairobi City County, 2022). While successes in one city can inspire others, limited network capacities (e.g., in redistributing resources between members; Moragues-Faus & Sonnino, 2018) and ongoing conflicts over land, infrastructure, and economic structures often deepen socio-economic disparities. Best-practice models frequently overlook informal economies and local inequalities, challenges especially pronounced in rapidly growing cities like Nairobi (Nairobi City County, 2022; Watson, 2016). This underscores the need for context-sensitive strategies that build on local capacities and address unequal access to land, resources, and decision-making (Birnbaum & Lütke, 2023; Resnick, 2024). Addressing these issues requires a mix of top-down policies, such as subsidies and food safety regulations (Resnick, 2024), and bottom-up initiatives led by NGOs and local producers. Though small-scale innovations can foster sustainability, community resilience, and ecological regeneration (Sage et al., 2021), they often remain marginalized in research and policy. Sustainable transformation, therefore, is not only complex and contested but must be grounded in local realities.

2.2. Urban Food Governance and Peri-Urban Development

Ensuring food security has long been a core responsibility of urban administrations (Steel, 2013), but in recent decades, other priorities have taken precedence (Wiskerke, 2015). Rapid urban population growth has shifted the focus toward housing, education, and the expansion of infrastructure such as roads, electricity, and digital connectivity. In countries grappling with widespread food poverty, officials must nonetheless constantly address food insecurity (Battersby & Watson, 2018b). Urban infrastructure and food systems are closely interconnected: Food systems influence the layout of a city and how its infrastructure is utilized, while access to infrastructure shapes food choices (LOGIC et al., 2024). A sustainable food supply relies not only on access to resources like energy, water, and land (Wiskerke, 2015) but also on the social and political relationships, ideas, and visions that govern and influence this access (LOGIC et al., 2024).

Yet, urban expansion often converts fertile land, creating trade-offs between development and agriculture. Peri-urban areas, common on the outskirts of large cities in SSA, can be theorized in different ways (Follmann, 2022): as territories to be planned and controlled; as functional spaces defined by flows and interactions; or as transitional zones, “cities-in-the-making,” serving as basic resources for urban growth (Brenner & Schmid, 2017). The latter highlights how urban demands drive resource extraction and appropriation, exposing contradictions within capitalist urbanization (Brenner, 2019). Understanding the social, economic, and infrastructural characteristics of these spaces could help authorities better integrate them into urban planning and move beyond a traditional state or market-driven approach, opening up space for community-led development (LOGIC et al., 2024).

2.3. The Informal (Food) Economy

The evolution and development of the informal economy, which is prevalent in both rural and urban SSA (Skinner & Watson, 2020), is influenced by historical processes, global power dynamics, and hegemonic knowledge production:

The informal economy or informal sector is a broad term that refers to the many aspects of a country's economy that are not taxed or monitored tightly by any form of government and are not included in the GNP of that country. (Ruzek, 2015, p. 6)

Informal economic activities are largely unregistered, labor-intensive, and operate with minimal capital input (Komollo, 2010). They typically occur in unregulated markets without government support, often in poorly serviced and environmentally vulnerable urban spaces, which limits their economic potential. The sector is characterized by small-scale enterprises that use local resources and low technology and is heavily reliant on women and children as labor (Resnick, 2020). We will show that Nairobi's food retail sector is broadly divided into formal and informal markets, although the distinction is fluid. Informality exists on a continuum shaped by taxation, regulation, and working conditions (Etzold et al., 2009). Unlike supermarkets, which rely on modern infrastructure and formal supply chains, informal vendors often operate with flexible business models that adapt to local economic conditions and consumer needs.

City governments need to assess food systems and identify intervention points for food security, but the informal food sector is often overlooked in policy (Crush & Young, 2019). When it is included, regulations based on Western models (Kinyanjui, 2019) can exacerbate inequalities and food insecurity. Effective integration of informality into local policy is critical for sustainable urban food systems in SSA. Policy approaches to informality vary (Crush & Young, 2019): Dualist views see it as a sign of underdevelopment and therefore an obstacle to development, structuralists see it as exploitation, and neoliberals see it as entrepreneurship in need of regulatory support. We explore the interplay between formal and informal markets, emphasizing their interconnectedness rather than treating them as separate entities. The potential to support the local informal structures that are already working could therefore provide new opportunities to transform food systems in a locally specific way.

3. Case Study and Methodology

Kasarani was selected as the research site based on theoretical and methodological considerations. Since the 1990s, the area has undergone significant transformation, increasingly being integrated into Nairobi's urban fabric. Located about 17 kilometers northeast of the central business district, Kasarani typifies a peri-urban zone characterized by rapid spatial and socioeconomic change.

Fieldwork was conducted over three periods between November 2022 and March 2024, totaling 12 weeks, in collaboration with local field assistants with long-standing ties to the area. This allowed for an in-depth understanding of the heterogeneous population's experiences, focusing on the social ties, economic structures, and infrastructural elements supporting the local food system. To understand the spatial dynamics of food access, we used a mixed-methods approach (Fülling et al., 2024), combining quantitative mapping of 296 food outlets with qualitative observations and interviews. Mapping data included shop

location, type, product range, number and gender of employees, special features, and pricing. We also conducted 40 qualitative interviews (indicated in the text as I and the number, e.g., I1, I2, etc.), including three group interviews (4–6 participants), with traders, customers, and food system experts, each lasting 30 minutes to two hours. To address the lack of literature on area development, some interviews were conducted as narrative historical interviews with long-term residents.

While the primary focus was on the evolution of food retail and consumer behavior, additional insights emerged that are critical for conceptualizing sustainable urban food systems. Interview analysis followed a two-step coding process: first, inductive coding to capture perspectives on local food trade and consumption; second, clustering findings into social, economic, and infrastructural dimensions according to our framework. The analysis begins with Nairobi's broader urban development, narrows to its food system, and then focuses on Kasarani's food landscape. Emphasizing the informal sector's crucial role in food provision, employment, and social support, the study argues for policies grounded in a nuanced understanding of local dynamics, recognizing spatial diversity and the enduring significance of informality in Nairobi's food system.

4. Results: Recognizing the Locale

4.1. Nairobi's Growth Trajectory: Colonial Roots, Neoliberal Shifts, and Future Visions

Over the past 120 years, Nairobi has evolved from a simple railway station into Kenya's capital and a major East African megacity (Owuor & Mbatia, 2012). Selected for its access to water, flat terrain, and cooler climate, the city soon developed into an administrative and commercial center under British colonial rule. Early colonial planning established a segregated urban structure, with distinct zones for Europeans, Asians, and Africans—a spatial division that continues to shape the city's development today (Kinyanjui, 2019; Ogot & Ogot, 2020).

Following independence, Kenyan policymakers pursued growth and welfare strategies aimed at integrating African urban areas, including investments in public housing, social infrastructure, and essential services. However, the dominant “catch-up” development approach also promoted slum clearance and the regulation of informal activities (Kinyanjui, 2019). Particularly during the late 1970s and early 1980s, it became apparent that state institutions were unable to manage Nairobi's rapid population growth. Top-down planning approaches contributed to the expansion of informal settlements and increased urban fragmentation (Owuor & Mbatia, 2012).

The 1980s and 1990s marked a discursive and political shift toward neoliberalism in Nairobi's urban governance (Carmody & Owusu, 2016; Morange, 2015). Local authorities struggled with unresolved debts, growing dependence on the central government for capital investments, weak leadership, and deteriorating service delivery (Owuor & Mbatia, 2012, pp. 123–124). Structural adjustment programs imposed by international lenders reshaped the city's development (Rono, 2002), drastically reducing public housing previously managed by the National Housing Corporation and opening the sector to private developers (Mwau et al., 2020). Public utilities such as the Nairobi City Water and Sewerage Company and Kenya Power were also partially privatized. These austerity measures fueled a surge in informal sector employment, which has dominated Nairobi's labor market since the 1990s. The informal housing market likewise expanded, particularly in the city's peripheral areas, reinforcing broader trends toward informality. Today, approximately 70% of Nairobi's population lives in informal settlements (Fodde, 2022). Many residents rent from

unregulated landlords and are often compelled to spend a substantial share of their income on poor-quality housing, leaving little for other essentials. Rising rents within informal settlements, compounded by nearby housing projects targeting the small middle class, have further exacerbated social inequalities and placed additional strain on already fragile infrastructure. Moreover, informal settlements, often characterized by insecure tenure, are typically located on unsuitable land, frequently contaminated and thus poorly suited for food production or livestock keeping (Fodde, 2022).

In 1999, Nairobi's fiscal situation began to improve with the introduction of the Local Authorities Transfer Fund (Owuor & Mbatia, 2012), which aimed to strengthen municipal finances and expand planning capacities. From the mid-2000s onward, urban policy increasingly focused on transforming Nairobi into a "World Class City" (Myers, 2015; Owuor & Mbatia, 2012). This shift marked a renewed interest in master planning, alongside continued decentralized planning efforts by NGOs dating back to the 1990s. These developments were driven by factors such as record resource export revenues, China's growing role as a lender and infrastructure partner, and revived international support for infrastructure-led development (Gillespie & Schindler, 2022). The construction of the Thika Road highway exemplifies this new phase, connecting Nairobi with its peripheries and beyond and aiming to attract investments in industry, logistics, housing, and infrastructure. Such projects are expected to stimulate private sector growth but also have profound implications for urban spatial structures, food systems, and social equity.

4.2. Nairobi's Urban Food System

Today, Nairobi exemplifies typical food security challenges faced by cities in SSA. According to the Food Insecurity Experience Scale, 60% of residents have experienced some form of food insecurity (Nairobi City County, 2022), and one-third cannot afford a balanced, healthy diet due to high prices (Owuor, 2019). Although 20% of Nairobi County's food is produced locally (Fodde, 2022), scholars largely agree that affordability, not availability, is the core issue (Battersby & Watson, 2018a; Smit, 2016). This is especially evident in informal settlements, where staples are sold at small kiosks and by mobile vendors (Downs et al., 2022).

Over the past two decades, supermarkets have expanded across Kenya. Nairobi hosts large international chains (e.g., Carrefour), national chains (e.g., Tusky, Naivas), and smaller local chains (Sonntag & Kulke, 2021). Yet, informal vendors still dominate the market. Their importance is partly explained by the inclusion of subsistence and care work, accounting for 20–60% of urban labor output (Komollo, 2010), often carried out near or within households (Skinner & Watson, 2020). Research highlights that informal food trade is essential for the food security of the urban poor and shifting employment patterns (Battersby & Watson, 2018b). Unlike supermarkets, mainly located in wealthier areas, kiosks are more accessible, offering lower prices, small quantities, and credit options, supporting what is termed the *kadogo* (small) economy (Fodde, 2022).

State-designated markets, such as Nairobi's Wakulima Wholesale Market, are crucial for urban food security. However, despite rapid population growth since the country's independence in 1963, public market development has been neglected (Gründler et al., 2024). Plans for 55 new markets since the 1970s never materialized, leading to the rise of informal markets on precarious or disputed land. Political interference and forced evictions have further destabilized these spaces. Traditional markets, while still the main source for fresh produce, suffer from poor sanitation, congestion, and infrastructure deficits. Informal economic activities dominate, and governance remains a challenge.

Recently, Nairobi's county government has begun formalizing trade by building and upgrading markets to improve infrastructure, security, and food safety. These efforts are part of the NUFSS, focusing on six pillars: sustainable diets, social and economic equity, food production, supply and distribution, and food waste (Nairobi City County, 2022).

Given that Kenya has the highest rate of informal sector employment in East Africa, absorbing around 77% of workers, Brown (2019) argues against formalizing the informal sector. Instead, he advocates for food-focused social programs such as microcredit, food banks, school feeding programs, education initiatives, employment programs, and cash transfers. While urban agriculture has shown largely positive effects, Brown notes that spending remains inadequate, particularly in cash-driven urban economies where land for farming is limited.

The analysis of our own data from Kasarani will shed light on the specific challenges and potential in this area for sustainable urban food system transformation.

4.3. Kasarani: A Diverse and Fragmented Part of Urban Nairobi

A specific catalyst for the rapid urbanization in northeastern Nairobi was the construction of the Thika Road highway between 2009 and 2012 (K'Akumu & Gateri, 2022). This not only improved connectivity for Kasarani with the rest of the city but also facilitated the relocation and establishment of important urban institutions, such as Kenyatta University, as well as the generally uneven growth in various middle- and low-income neighborhoods. Our field research in Kasarani highlights it as a typical peri-urban settlement. While Kasarani designates an entire sub-county, our research specifically focuses on the Kasarani Location, a smaller administrative unit within this sub-county. This location extends from the Thika Road highway to the Mwiki Location, encompassing a variety of neighborhoods. As of 2019, the Kasarani Location was home to approximately 138,000 inhabitants (Kenya National Bureau of Statistics, 2019), with an estimated half residing in the neighborhoods under review. The specific areas of our research include Clay City, City Chicken Estate, Sunton, and Gituamba, all depicted in Figure 1.

While some areas, like Clay City, have historical roots from the colonial period as small villages near the Nairobi-Nanyuki railway line (Kinuthia et al., 2021), significant urbanization did not occur until the 1990s. Therefore, the oldest information about the other three neighborhoods under review—City Chicken Estate, Sunton, and Gituamba—can be traced back to the late 1980s. The chosen neighborhoods exhibit significant diversity in terms of their socio-economic composition, building structures, and access to public and private infrastructure, including schools, water supply, and paved roads. Clay City, City Chicken Estate, and Sunton represent typical middle-class areas, each with distinct characteristics with regard to their construction, demographics, and historical development.

Since the early 2000s, Clay City, along Thika Road, has seen significant investment in mid-rise (five to seven-story) residential complexes, largely occupied by middle-class residents. Its strategic location ensures easy access to the central business district and western employment centers. Originally developed around a brick factory in the 1960s, the area did not experience significant population growth until the late 1980s. The area is now home to several supermarkets and a mix of formal and informal food retailers.

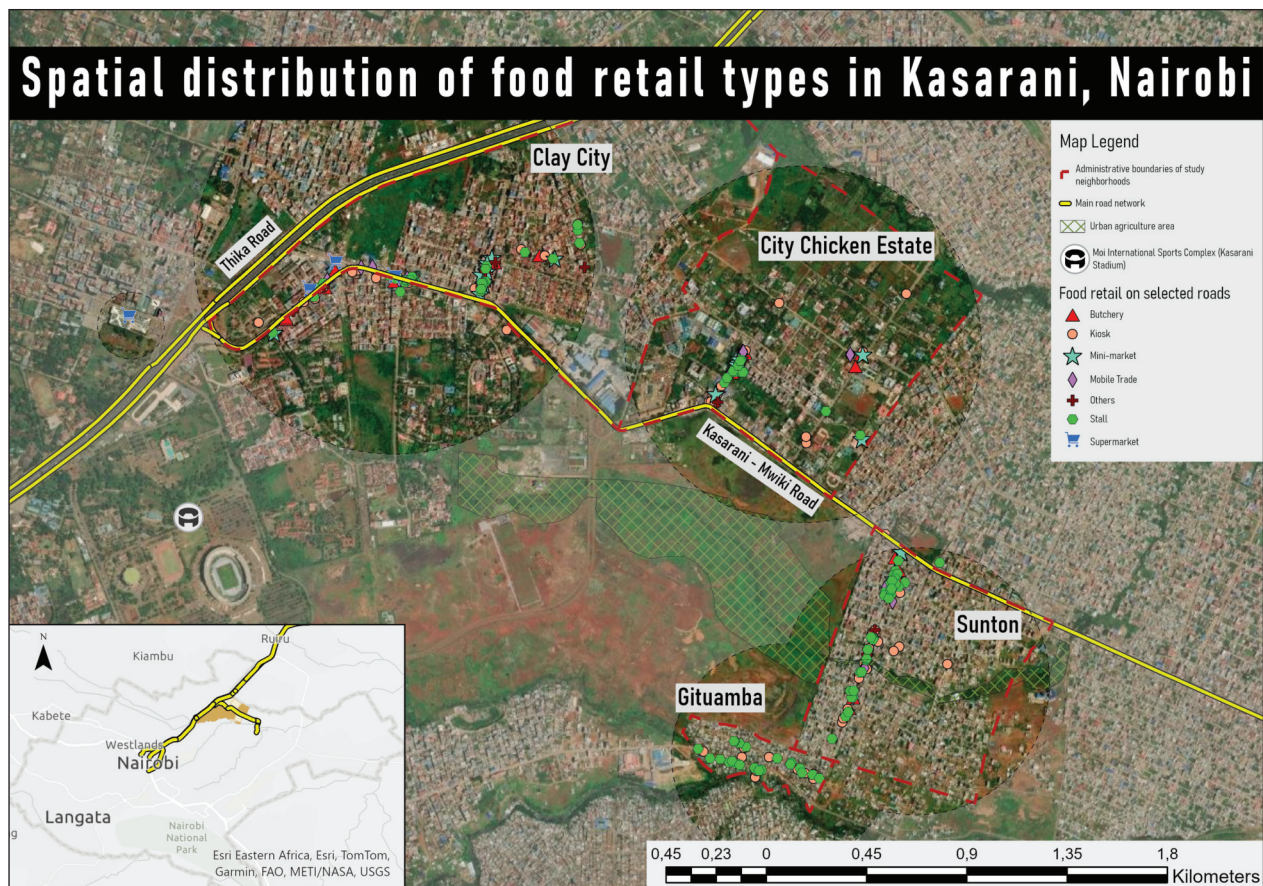


Figure 1. Overview of the distribution of food retailers based on type of business.

City Chicken Estate, developed from the 1980s, was established by a poultry farming cooperative that sold large plots of land to high-level employees and middle-class buyers, including civil servants (I24; Mwau et al., 2020, p. 40). The area consists mostly of upscale single-family homes with large gardens, although recent developments along Kasarani-Mwika Road show a shift toward multi-story apartments. The neighborhood maintains a low population density due to the prevalence of large residential plots and the relative absence of commercial street activity.

Established in the late 1980s, Sunton serves middle- and lower-middle-income groups. It features dense apartment blocks alongside older single-story houses and has a vibrant informal economy, especially along Kasarani-Mwika Road, with stalls and small vendors fueling a dynamic local food market that reflects the ongoing infrastructural transformation.

Gituamba, an informal settlement dating back to the early 1990s, is home to over 10,000 people in dense, self-built stone houses on the hillside. It operates on a micro scale, mainly through small kiosks, street vendors (*mama mbogas*), and mobile traders: a *kadogo* economy of small transactions. Despite the robust housing, the area faces food insecurity, low income, and socio-economic marginalization.

Kasarani Location emerges as a highly fragmented urban space, encompassing peri-urban zones and exhibiting staunch variations in social, economic, and infrastructural characteristics at a micro-spatial level.

5. Taking the Local Context Seriously: Kasarani's Diverse Food Landscape

As outlined above, Kasarani is made up of diverse and fragmented neighborhoods characterized by different social relations, economic structures, and access to infrastructure, including the availability of roads, water, sewerage, electricity, and food vending, which can vary significantly even within the same street (see Figure 1). These urban structures significantly shape the local food system, affecting mobility, food access, storage possibilities, and preparation techniques. Furthermore, food retailing serves both as an important source of income for local vendors and as a means of food redistribution, affecting social relations and possible futures. The following section briefly explores these dynamics.

5.1. Supermarkets and Street Vendors: Parallel Urban Food Systems

On the retail side, several supermarket chains have strategically positioned themselves along the key north-south Thika Road highway. Close to the highway's access point, the Thika Road mall hosts a high-end Carrefour supermarket. Supermarkets like Naivas, along with smaller chains such as PowerStar and Kassmatt, are located about one kilometer further into Kasarani Sub County. These supermarkets offer a wide range of products, from staples such as unga, rice, beans, and cooking oil to indulgent items such as cakes, meat, and fresh produce, often with special offers. A key feature of these retail systems is their proximity to central urban nodes, providing convenient access for wealthier, more mobile customers. They also utilize modern infrastructure, including refrigerators, uniform shelving, and advertising, selling goods of national and international value.

In more peripheral urban areas, such as Kasarani Location, which is farther from central infrastructure and mainly inhabited by middle- and lower-income groups, these supermarkets do not adequately serve all customers. While our data shows that nearly all interviewees shop at supermarkets, the frequency of visits and the types of goods purchased differ significantly. For example, middle-class interviewees typically visit supermarkets once a week to buy processed everyday items like unga, rice, and beans, along with other products. In contrast, the supermarket plays a subordinate role for lower-income interviewees, who face challenges in accessing supermarkets due to distance and financial constraints. They also struggle to purchase large packages of goods, which they cannot afford or store properly.

Regardless of income, all respondents confirmed that they rely on street vendors, particularly for fresh produce (*mama mbogas*). Informal vendors in kiosks and small stalls are crucial to neighborhood resilience, especially in times of crisis. Even in middle-class areas like Sunton, residents maintain personal relationships with one to three preferred vendors. This fosters loyalty and mutual expectations: Customers expect fair prices, and vendors may extend credit through tab systems, ensuring continued food access during economic hardships. It is not surprising that two vendors from the informal settlement of Gituamba explained:

You cannot say that you will not give products on credit. I might have 10 shillings and I want greens, but I don't have enough for tomatoes and onions. I will tell you to give me, and tomorrow or the day after, I will give you, you, see? (Group Discussion Participant 1, I12)

But you cannot let someone sleep hungry when you have food there. (Group Discussion Participant 2, I12)

These informal practices go even further. For instance, one vendor provides free water to the neighborhood during supply shortages as she is the only one with access to a privately installed pumped water storage system for her shop (I19). While such practices are not uniform and depend on individual circumstances, it is clear that reducing informal stalls would make it especially difficult for marginalized residents to access affordable food. This is particularly critical in times of economic instability when affordable food is essential for maintaining a nutritious diet. Rising and fluctuating food prices often force households to reduce consumption or skip meals entirely. As one respondent explained, he stopped buying tomatoes and onions because the prices had doubled, saying: “As long as I have salt, vegetables, and cooking oil, let’s call it supper” (I19).

In general, these examples show that in Nairobi’s urban food system, formal, grid-connected infrastructure overlaps with informal infrastructure. However, it is the latter that plays a crucial role for the urban poor in terms of food security. Even better-off residents report relying on their *mama mboga*. Informal infrastructure, therefore, not only benefits the urban poor by providing access to food but also serves as an essential aspect of the local food environment in general. Consequently, formalization, which typically involves strict rules, regulations, and regular inspections, is not a viable approach unless it includes *mama mbogas* and allows them to operate within the spaces where their social networks are situated.

5.2. Social Relations to Support Individual Benefits

The significance of the social dimension in sustainable urban food systems is clear. A key element of this is the considerable impact that *mama mbogas* and other informal food market actors have on the local communities within their areas of operation. Their role goes beyond food distribution; they are vital social and economic actors, fostering local networks, enhancing food security, and contributing to the resilience of urban communities. As one interviewee explained:

So you just struggle yourself because sometimes life is very hard. But you still survive. When you have that *mama mboga* of yours, you go and tell her today, each and every person has that worst day. So that *mama mboga* you used to buy for her, she will give you. Because that is why, you see, you won’t go Githurai [a big wet market] all the time. I must go to that *mama mboga*, I must go to that kiosk. The moment I don’t have anything they give me, so that when I have money I give them. (I15)

Informal practices by *mama mbogas* and other small traders are crucial for the daily survival of the urban poor. Even though some items may cost slightly more than at larger markets like Githurai, there are compelling reasons for customers to visit their *mama mboga* regularly. In times of crisis, these traders offer immediate support, such as access to food and water, sometimes without direct payment. This creates a codependency, where vendors rely on their regular customers to return. During tough times, such as the 2023 economic crisis in Kenya, small vendors reduced package sizes and, consequently, profits due to decreased demand.

Furthermore, *mama mbogas* serve as role models in the community, demonstrating that running a small business can lead to economic success, which enhances their social status and offers the possibility of a more diverse diet (by consuming their own products). We found many examples of mutual aid, such as merry-go-round savings groups in Kasarani, where members can borrow money (with interest) and share savings at the end of the year (I19, I29). Several traders also viewed their stalls as platforms for gaining business knowledge, as well as life lessons:

Yeah, I can say I get profits. Since I started there, I used to have life stress. But now I don't have because I get many people, we talk. They can share their problems there. I also get business ideas there. (I9)

Regular interactions strengthen solidarity, even amid competition, which is crucial for improving social sustainability. Like other alternative food systems, the informal trade of *mama mbogas* at the local level plays an important role and needs sustained support, particularly during periods of transition. Our interviewees (I23, I34), especially those with fewer financial resources, noted that informal structures helped them survive, especially in crises when a steady income was uncertain (e.g., buying on credit or in smaller packages). The evidence shows that routine interactions based on trust and empathy can foster personal growth and benefit society, including the development of sustainable behaviors and initiatives through a bottom-up approach.

5.3. Vulnerabilities of Informal Traders

The urban reality of Nairobi cannot be understood without informality, in the economy but also in terms of access to infrastructure and the housing market as described above. In general, policymakers in Nairobi have adopted an antagonistic approach to the informal sector, in line with a Western understanding of development (Berger & van Helvoirt, 2018; Kinyanjui, 2019), sometimes even involving the eviction of street vendors (Smit, 2016).

In line with ambitions to formalize street vending with by-laws and regulations, and to upgrade facilities, new marketplaces were constructed as part of a wider plan by Nairobi Metropolitan Services and the Nairobi City County government to improve food safety, ensure hygiene standards, and implement a functioning taxation system (Berger & van Helvoirt, 2018). However, alongside the positive effects (e.g., access to proper infrastructures), traders also experienced alienation and the disruption of pre-established links with their local neighborhoods. As a result, the implementation of government policies aimed at relocating and regulating trade has led to conflicts between the government and local informal traders, and even roads are being built without warning, destroying workplaces (I12) and sometimes the homes of our interviewees (I22). These conflicts have the potential to impact the food security of individuals who rely on informal trade as a source of subsistence (Crush & Young, 2019) and ignore the potential for sustainable behavior that is already in the hands of informal traders.

5.4. Strengthening Urban Food Access Through Infrastructure and Social Policy

As shown in Figure 1, areas near the Thika Road highway and other major roads feature a mix of formal and informal vendors. Some benefit from amenities like parking spaces next to their stalls (I9). However, as we move further away, especially toward the outskirts of the informal settlement in Gituamba, the diversity and number of stalls decrease. Infrastructure issues, such as regular power outages (I21) and poor road conditions, are prevalent throughout these areas. Roads, in particular, are either congested with traffic or difficult to access (I13). Our interviewees expressed a desire for better roads to improve, for example, food delivery to their stalls (I12). In addition, the local workforce often lacks proper training, leading to a high proportion of unskilled workers (I38).

A significant portion of Nairobi's population, especially in low-income areas, faces food insecurity. Initial steps toward social protection, such as identifying vulnerable groups, providing food aid, establishing early warning systems for price shocks, and creating subsidized food markets, are essential for meaningful change (Nairobi City County, 2022). A promising solution could be the introduction of a free, universal school meal program, particularly in disadvantaged neighborhoods. While initiatives like the 4K clubs have had a limited impact, they offer valuable platforms for promoting urban agriculture and nutrition education. However, none of our respondents could identify examples of free meals provided through schools, NGOs, churches, or other public institutions. In peri-urban areas, off-grid infrastructures are crucial in supporting daily activities and have the potential to drive sustainable social transformation within the community.

5.5. Undeveloped Land for Urban Agriculture

While fertile land is a scarce resource, it is utilized wherever possible to support subsistence or, in optimal circumstances, to generate income. Informal settlements, often located on the city's periphery, have the potential for urban agriculture. In the 1990s, the first residents of Gituamba benefited from access to large plots of land near rivers, enabling them to engage in subsistence farming (I25). This not only supported household livelihoods but also contributed to the settlement's growth. However, farming was never the sole means of livelihood as residents also sought additional income through small-scale trade and casual labor (I22, I25).

The Moi International Sports Complex, Kasarani, built for the Pan-African (Olympic) Games in 1987, exemplifies early urbanization through mega-events (I39; K'Akumu & Gateri, 2022). However, like many such projects, it was not completed, leaving behind public wastelands and open spaces. A significant portion of this land, located near a minor river, is used for urban agriculture. The plots are informally divided and can be cleared at any time (I25). One major challenge is the use of contaminated water for irrigation, leading to negative perceptions of the crops grown there. These vegetables, often considered watery and even smelly, have become stigmatized, and the farmers are also marginalized. One interviewee described how the greens grown in this area were of poor quality, with reported stomach issues attributed to the contaminated water being used (I13). Urban agriculture has significant potential to transform urban food systems beyond food provision.

6. Discussion: Connecting Urban Food Systems and Local Realities

Urban food systems are deeply embedded in urban spaces and their corresponding infrastructure. Building on this, we advocate for an integrated perspective that connects transformation projects more explicitly with urban development processes. In this section, we discuss our findings through the lens of our analytical framework, focusing on the social, economic, and infrastructural dimensions at the local level. This integrated approach is crucial for addressing issues of sustainability and resilience, and we suggest this perspective to policymakers and scientists as a way forward in shaping more effective and context-sensitive urban food systems.

6.1. The Infrastructure Dimension: On/Off-Grid Access and Equity

Our own findings confirm that access to both formal and informal food sources varies significantly across different parts of the city, shaped by economic disparities and differences in access to on- and off-grid

infrastructure. A study by Downs et al. (2022) in Nairobi highlights how the food environment plays a significant role in shaping decisions about what to eat and where to buy food. Beyond personal preferences, factors such as income, convenience, and time constraints are critical. Local governments could play a pivotal role by regulating the placement of supermarkets and their integration into urban landscapes (Smit, 2016). Currently, supermarket distribution tends to favor middle- and high-income areas (Sonntag & Kulke, 2021). In addition, potential employers should be persuaded to settle in the peri-urban areas of the city by means of attractive offers, as was the case with the local slaughterhouse. This creates jobs and increases food security (I38) and is even linked to the construction of a paved road, which is already benefiting the entire Gituamba area (I29).

In informal settlements, however, residents rely on small-scale traders like *mama mbogas* and kiosks, especially when limited financial resources or the need to buy on credit restrict their options. Rather than pushing for formalization, as suggested by the NUFSS, policies could be designed to support traditional and small-scale traders (Berger & van Helvoirt, 2018) in the areas where they operate. This could include helping them access public infrastructure or legalizing self-constructed ones. Such a shift would help maintain accessibility and ensure food security for marginalized communities.

Addressing environmental challenges, such as the pollution of the Ngong, Nairobi, and Kibuthi rivers, is crucial as their current water quality renders them unsafe for both domestic and agricultural use (Nairobi City County, 2022). Restoring these waterways and improving wastewater treatment would significantly boost the potential for urban subsistence agriculture.

Moreover, integrating circular economy principles, such as using treated wastewater for fertilizer production, could further strengthen sustainable urban food systems while minimizing ecological impacts. As Wiskerke (2015) highlights, such measures not only help regulate urban temperatures, support climate change mitigation, and enhance rainwater storage but also reduce the need for long food transport routes, enable the productive reuse of waste, and foster community development and sustainable livelihoods, especially in peri-urban areas.

6.2. The Economic Dimension: Empowering Local Economies

Our findings show that while informality is often viewed as a marker of vulnerability, it can, in fact, contribute significantly to resilience and sustainability by offering opportunities for skill-building and income generation, particularly for underemployed and unemployed individuals (Magidi, 2022; Ruzek, 2015). Especially during times of crisis, when formal systems are strained or fail, informal economies play a crucial role in maintaining food access and supporting livelihoods (Ruzek, 2015). While our research does not focus on this aspect, we acknowledge that the expansion of informality can also lead to challenges, such as the proliferation of unregulated markets or the emergence of social tensions. These ambivalences underscore the need to strengthen the positive aspects of informality while mitigating its potential risks. To fully realize this potential, we suggest that informal skills and practices be formally recognized, supported, and fairly regulated—both to enhance their legitimacy and to prevent negative effects like cartel formation or the deterioration of social cohesion.

Building on these insights, we caution that the push for formalization and efficiency improvements in food logistics and trade, as envisioned in the NUFSS, could unintentionally exclude many small vendors who lack the resources to meet stricter standards, such as investment in refrigerated transport or compliance with hygiene regulations. Recognizing the critical role these small-scale traders play, not only for their own livelihoods but also for the overall resilience of urban food systems, is essential. Therefore, we recommend supporting them through access to financial resources, targeted training, and infrastructural improvements, rather than simply enforcing formalization.

Finally, aligning such support strategies with the Sustainable Development Goals—particularly SDG 1 (“No Poverty”) and SDG 8 (“Decent Work and Economic Growth”)—offers a path toward more inclusive and sustainable urban development. By actively strengthening small-scale and informal traders within this framework, local governments can foster broader economic participation, reduce inequality, and lay the groundwork for the resilient and sustainable transformation of urban food systems.

6.3. The Social Dimension: Mobilization of All Social Groups

Supporting small traders aligns with broader efforts to strengthen local economies and meet the needs of urban populations living in informal settlements (Fodde, 2022). Recognizing the potential of the informal sector, it can be understood as a platform for collective action against perceived injustices and economic exclusion. In line with our findings, Magidi (2022) highlights how informal practices significantly contribute to social cohesion and the development of social capital, which is particularly important for individuals in disadvantaged circumstances as they promote both economic and social well-being. Drawing on the African Ubuntu philosophy (Magidi, 2022) and the Kenyan principle of Harambee, which emphasizes mutual support and collective resilience, informal networks help foster a sense of community and shared responsibility in times of adversity.

While Nairobi’s urban agriculture initiatives (Nairobi City County, 2022) demonstrate potential, they have primarily benefited wealthier neighborhoods so far. Persistent challenges such as land access and peri-urban governance continue to limit broader participation (Smit, 2016). Other examples from Nairobi reveal that urban farmers frequently face displacement, threats, deliberate destruction, extortion, and corruption (Kituku & Kitata, 2023). To promote greater inclusivity, local governments should support bottom-up, participatory approaches such as community-driven urban gardening, which can also serve as valuable educational tools for both children and adults. However, achieving this requires adapting land use rights to secure long-term access for marginalized groups.

7. Transforming Urban Food Systems: Considering Local Realities for Inclusive and Sustainable Change

Our findings demonstrate that social, economic, and physical infrastructure elements combine in fragmented, locally specific ways to create socio-material arrangements that present both opportunities and challenges for sustainable food system transformation. In Nairobi, historical and spatial analysis reveal a fragmented city, where unique, place-based food system processes and infrastructure have emerged. Yet the transformative potential embedded in peri-urban areas and informal economic structures remains neglected.

Nairobi's fragmented infrastructures, economic constraints, and complex social geographies reveal the critical role of informal markets in ensuring food supply, social cohesion, and economic resilience. Yet, current strategies—often guided by global frameworks like the Milan Urban Food Policy Pact—prioritize productivity over equity and sustainability, risking further exclusion.

Our findings highlight the importance of acknowledging the lived realities and coping strategies of low-income urban residents. A locally grounded framework revealed how self-constructed, alternative practices already support transformation in more adaptive and less conflict-prone ways. Limiting the operating space of small-scale traders and farmers undermines both livelihoods and access to affordable, nutritious food. Recognizing the informal food economy is vital for equitable access and income generation in marginalized communities. Decentralized, self-organized practices are essential for building resilient food systems, especially in unplanned peri-urban areas.

To enable inclusive and sustainable transformation, urban food policies must better address local conditions, foster coexistence between formal and informal systems, and integrate locally grounded strategies into broader development frameworks. This includes securing land rights, improving on- and off-grid infrastructure, providing targeted subsidies, and investing in youth education.

Ultimately, meaningful transformation starts with a deeper understanding of local contexts. A historical perspective on national development pathways can further inform future research by helping to explain why certain socio-material arrangements persist—and how they might be reshaped to create a more just and sustainable future.

Acknowledgments

The authors would like to thank all interviewees, and especially the field assistants Eileen Kvata, Alexander Murithi, Kate Owino, and John Shadrack, for their time and insights, without which this study would not have been possible. We would also like to express our thanks to the Kenyan and German participants in the Urban Geographies of the Global South study project, conducted from April to August 2023 in a hybrid and on-site format in Nairobi.

Funding

This publication is based on research funded by the German Research Foundation (DFG) within the project Knowledge and Goods II: Communicative Action of Consumer and Intermediaries (A03) as part of the Collaborative Research Centre Re-Figuration of Spaces (CRC 1265).

Conflict of Interests

The authors declare no conflict of interests.

Data Availability

If you are interested in the research data associated with this article, please contact the CRC 1265 research data repository by email repository@sfb1265.tu-berlin.de.

Supplementary Material

Supplementary material for this article is available online in the format provided by the authors (unedited).

References

- Battersby, J., & Watson, V. (2018a). Addressing food security in African cities. *Nature Sustainability*, 1, 153–155.
- Battersby, J., & Watson, V. (2018b). Improving urban food security in African cities: Critically assessing the role of informal retailers. In Y. Cabannes & C. Marocchino (Eds.), *Integrating food into urban planning* (pp. 186–208). UCL Press. <https://doi.org/10.2307/j.ctv513dv1.16>
- Berger, M., & van Helvoirt, B. (2018). Ensuring food secure cities—Retail modernization and policy implications in Nairobi, Kenya. *Food Policy*, 79, 12–22. <https://doi.org/10.1016/j.foodpol.2018.04.004>
- Birnbaum, A., & Lütke, P. (2023). Food and governmentality in the green city: The case of German food policy councils. *Urban Planning*, 8(1), 388–398.
- Blay-Palmer, A. (2010). Imagining sustainable food systems. In A. Blay-Palmer (Ed.), *Imagining sustainable food systems: Theory and practice* (pp. 3–35). Routledge.
- Brenner, N. (2019). *New urban spaces: Urban theory and the scale question*. Oxford University Press.
- Brenner, N., & Schmid, C. (2017). Elements for a new epistemology of the urban. In S. Hall & R. Burdett (Eds.), *The Sage handbook of the 21st century* (pp. 47–67). Sage.
- Brown, A. M. (2019). Planning for less planning: Supporting informal food systems in Nairobi. In C. N. Silva (Ed.), *Routledge handbook of urban planning in Africa* (pp. 354–365). Routledge.
- Carmody, P., & Owusu, F. (2016). Neoliberalism, urbanization and change in Africa: The political economy of heterotopias. *Journal of African Development*, 18(1), 61–73.
- Crush, J., & Young, G. (2019). Resituating Africa's urban informal food sector. *Urban Forum*, 30, 377–384.
- Downs, S. M., Fox, E. L., Mutuku, V., Muindi, Z., Fatima, T., Pavlovic, I., Husain, S., Sabbahi, M., Kimenju, S., & Ahmed, S. (2022). Food environments and their influence on food choices: A case study in informal settlements in Nairobi, Kenya. *Nutrients*, 14(13), Article 2571. <https://doi.org/10.3390/nu14132571>
- Etzold, B., Bohle, H.-G., Keck, M., & Zingel, W.-P. (2009). Informality as agency—Negotiating food security in Dhaka. *DIE ERDE*, 140(1), 3–24.
- Fodde, M. B. (2022). *How just is access to food in African Cities?* Friedrich-Ebert-Stiftung Kenya Office. <https://library.fes.de/pdf-files/bueros/kenia/19640.pdf>
- Follmann, A. (2022). Geographies of peri-urbanization in the global south. *Geography Compass*, 16(7), Article e12650. <https://doi.org/10.1111/gec3.12650>
- Fülling, J., Hering, L., & Kulke, E. (2024). Mapping and photo documentation: Proposal for a space-sensitive mixed methods design using the example of retail mapping. In A. J. Heinrich, S. Marguin, A. Million, & J. Stollmann (Eds.), *Handbook of qualitative and visual methods in spatial research* (pp. 265–281). transcript.
- Gillespie, T., & Schindler, S. (2022). Africa's new urban spaces: Deindustrialisation, infrastructure-led development and real estate frontiers. *Review of African Political Economy*, 49(174). <https://doi.org/10.1080/03056244.2023.2171284>
- Gründler, J., Steep, J., Mosch, L., Manke, G., Ongosi, M., & Shadrack, J. K. (2024). The process of formalisation of food markets—Tracing chances & challenges on current examples from the city of Nairobi. In L. Hering, & A. Kohrs (Eds.), *Food systems in peri-urban Nairobi. Insights into retail, consumption and food security in the rapidly changing neighborhood of Kasarani* (pp. 9–29). Humboldt-Universität zu Berlin.
- Hendriks, S., Soussana, J.-F., Cole, M., Kambugu, A., & Zilberman, D. (2023). Ensuring access to safe and nutritious food for all through the transformation of food systems. In J. von Braun, K. Afsana, L. O. Fresco, & M. H. A. Hassan (Eds.), *Science and innovations for food systems transformation* (pp. 31–58). Springer.
- K'Akumu, O. A., & Gateri, C. W. (2022). Evaluation of the Nairobi-Thika road improvement project in the context of inclusive development. *Journal of Asian and African Studies*, 58(7), 1325–1348. <https://doi.org/10.1177/00219096221084254>

- Kenya National Bureau of Statistics. (2019). *Summary report on Kenya's population projections*. <https://www.knbs.or.ke/wp-content/uploads/2023/09/2019-Kenya-population-and-Housing-Census-Summary-Report-on-Kenyas-Population-Projections.pdf>
- Kinuthia, H., Majale, C., & Letema, S. (2021). Influence of public policy planning on peri-urban land speculation in (greater) Eastern bypass in Nairobi metropolitan. *Land Use Policy*, 107, Article 105515. <https://doi.org/10.1016/j.landusepol.2021.105515>
- Kinyanjui, M. N. (2019). *African markets and the Utu-Ubuntu business mode: A perspective on economic informality in Nairobi*. African Minds.
- Kituku, G., & Kitata, B. M. (2023). Guerilla farming in Nairobi: A case of urban farmers' resilience and subversion. In M.-C. Velte, A. Segieth, A. C. Nyiti, N. A. Munuo, B. Makau Kitata, J. Eggers, N. E. Yamungu, & S. Fuss (Eds.), *Exploring urban agriculture in Global North and South* (pp. 59–67). Humboldt-Universität zu Berlin.
- Komollo, F. O. (2010, October). *Regularizing the informal sector 'jua kali' activities in Nairobi for sustainable development* [Paper presentation]. 46th ISOCARP Congress, Nairobi, Kenya.
- Lawrence, G., Sippel, S. R., & Burch, D. (2015). The financialisation of food and farming. In G. M. Robinson & D. A. Carson (Eds.), *Handbook on the globalisation of agriculture* (pp. 309–327). Edward Elgar.
- Living Off-Grid Food and Infrastructure Collaboration, Battersby, J., Brown-Luthango, M., Fuseini, I., Gulabani, H., Haysom, G., Jackson, B., Khandelwal, V., MacGregor, H., Mitra, S., Nisbett, N., Perera, I., te Lintelo, D., Thorpe, J., & Toriro, P. (2024). Bringing together urban systems and food systems theory and research is overdue: Understanding the relationships between food and nutrition infrastructures along a continuum of contested and hybrid access. *Agriculture and Human Values*, 41(2), 437–448. <https://doi.org/10.1007/s10460-023-10507-6>
- Magidi, M. (2022). The role of the informal economy in promoting urban sustainability: Evidence from a small Zimbabwean town. *Development Southern Africa*, 39(2), 209–223. <https://doi.org/10.1080/0376835X.2021.1925088>
- McFarlane, C. (2021). *Fragments of the city: Making and remaking urban worlds*. University of California Press.
- Moragues-Faus, A., & Sonnino, R. (2018). Re-assembling sustainable food cities: An exploration of translocal governance and its multiple agencies. *Urban Studies*, 56(4), 778–794. <https://doi.org/10.1177/0042098018763038>
- Morange, M. (2015). Street trade, neoliberalisation and the control of space: Nairobi's central business district in the era of entrepreneurial urbanism. *Journal of Eastern African Studies*, 9(2), 247–269. <https://doi.org/10.1080/17531055.2015.1018407>
- Mwau, B., Sverdlik, A., & Makau, J. (2020). *Urban transformation and the politics of shelter: Understanding Nairobi's housing markets*. International Institute for Environment and Development. <http://pubs.iied.org/10876IIED>
- Myers, G. (2015). A world-class city-region? Envisioning the Nairobi of 2030. *American Behavioral Scientist*, 59(3), 328–346. <https://doi.org/10.1177/0002764214550308>
- Nairobi City County. (2022). *Nairobi City County food system strategy*. <https://nairobi.go.ke/download/nairobi-city-county-food-system-strategy>
- Neckel, S. (2017). The sustainability society: A sociological perspective. *Culture, Practice & Europeanization*, 2(2), 46–52.
- Ogot, B. A., & Ogot, M. M. (2020). *History of Nairobi city, 1899–2000: from railway camp and supply depot to a world class African metropolis*. Anyange Press.
- Owuor, S. (2019). Urbanization and household food security in Nairobi, Kenya. In M. Nagao, J. Masinja, & A. Alhassan (Eds.), *Sustainable development in Africa: Case studies* (pp. 161–174). Spears Media Press.

- Owuor, S., Brown, A., Crush, J., Frayne, B., & Wagner, J. (2017). *The urban food system of Nairobi, Kenya*. Hungry Cities. <https://hungrycities.net/wp-content/uploads/2017/11/HC6.pdf>
- Owuor, S., & Mbatia, T. (2012). Nairobi. In S. Bekker & G. Therborn (Eds.), *Capital cities in Africa: Power and powerlessness* (pp. 120–140). CODESRIA.
- Pfister, T., Schweighofer, M., & Reichel, A. (2016). *Sustainability*. Routledge.
- Resnick, D. (2020). *The politics and governance for informal food retail in urban Africa*. International Food Policy Research Institute. <https://www.jstor.org/stable/resrep46682>
- Resnick, D. (2024). Political economy of agriculture and food policy in Africa. *Annual Review of Resource Economics*, 16(1), 255–276. <https://doi.org/10.1146/annurev-resource-101722-080332>
- Resnick, D., & Swinnen, J. (2024). Political economy of food system transformation. In D. Resnick, & J. Swinnen (Eds.), *The political economy of food system transformation. Pathways to progress in a polarized world* (pp. 1–30). Oxford University Press.
- Rono, J. K. (2002). The impact of the structural adjustment programmes on Kenyan society. *Journal of Social Development in Africa*, 17(1), 81–98.
- Ruzek, W. (2015). The informal economy as a catalyst for sustainability. *Sustainability*, 7(1), 23–34. <https://doi.org/10.3390/su7010023>
- Sage, C., Kropp, C., & Antoni-Komar, I. (2021). Grassroots initiatives in food system transformation. The role of food movements in the second ‘great transformation.’ In C. Kropp, I. Antoni-Komar, & C. Sage (Eds.), *Food system transformations: Social movements, local economies, collaborative networks* (pp. 1–20). Routledge.
- Skinner, C., & Watson, V. (2020). The informal economy in urban Africa. Challenging planning theory and praxis. In G. Bhan, S. Srinivas, & V. Watson (Eds.), *Routledge Companion to Planning in the Global South* (pp. 123–131). Routledge.
- Smit, W. (2016). Urban governance and urban food systems in Africa: Examining the linkages. *Cities*, 58, 80–86. <https://doi.org/10.1016/j.cities.2016.05.001>
- Sonnino, R. (2023). Food system transformation: Urban perspectives. *Cities*, 134, Article 104164. <https://doi.org/10.1016/j.cities.2022.104164>
- Sonntag, C., & Kulke, E. (2021). The expansion of supermarkets and the establishment of delivery systems and intermediaries for fresh fruit and vegetables in the Global South—the case of Kenya and Tanzania. *DIE ERDE*, 152(3), 166–183.
- Steel, C. (2013). *Hungry city: How food shapes our lives*. Vintage Books.
- von Braun, J., Afsana, K., Fresco, L. O., Hassan, M. H. A., & Torero, M. (2023). Food system concepts and definitions for science and political action. In J. von Braun, K. Afsana, L. O. Fresco, & M. H. A. Hassan (Eds.), *Science and innovations for food systems transformation* (pp. 11–20). Springer.
- Watson, V. (2016). Shifting approaches to planning theory: Global North and South. *Urban Planning*, 1(4), 32–41. <https://doi.org/10.17645/up.v1i4.727>
- Wiskerke, J. S. C. (2015). Urban food systems. In H. de Zeeuw & P. Drechsel (Eds.), *Cities and agriculture: Developing resilient urban food systems* (pp. 1–25). Routledge.

About the Authors



Linda Hering is a postdoctoral researcher in the CRC 1265 Refiguration of Spaces, based at the Humboldt University of Berlin. Her research explores how social inequalities are (re)produced in space, particularly in urban areas and agri-food systems. She focuses on the historical transformation of sociospatial arrangements and their role in shaping contemporary vulnerabilities and future resilience.



Alexander Kohrs was a research assistant at CRC 1265 Refiguration of Space and is currently pursuing a PhD in urban geography. He holds an MA in urban geography and conducted several multi-month research stays in Nairobi between 2022 and 2024, focusing on everyday food practices and spatial transformation processes in the district of Kasarani. His PhD research examines urban fragmentation and infrastructure-led development and their effects on emerging food retail landscapes.

“They Will Make It Center”: Navigating Food Gentrification in Amsterdam’s Javastraat

Maximilian Schrobenauser and Petra Lütke

Department of Geography, University of Münster, Germany

Correspondence: Maximilian Schrobenauser (m.schrobenauser@uni-muenster.de)

Submitted: 25 November 2024 **Accepted:** 16 June 2025 **Published:** 14 August 2025

Issue: This article is part of the issue “Perspectives on Food in the Sustainable City” edited by Birgit Hoinle (University of Hohenheim), Alena Birnbaum (University of Kassel), and Petra Lütke (University of Münster), fully open access at <https://doi.org/10.17645/up.i395>

Abstract

Food gentrification is a key driver of socio-economic and socio-cultural change in urban spaces. The influx of affluent populations into marginalized neighborhoods often leads to the rise of new food outlets—upscale restaurants, artisan cafés, and boutique-style food shops—that may initially complement but eventually displace local food cultures. This study examines Javastraat in Amsterdam as a prominent example of urban (food) gentrification in Europe, focusing in particular on the long-term effects of gentrification on restaurants and food shops who identify as non-European in their menus and food marketing. State-led redevelopment in Javastraat has displaced local shops and eateries while imposing cosmopolitan ideals of diversity and sustainability. As a result, long-established immigrant food establishments have been pressured to align their menus to the tastes of the incoming affluent residents and elite workers. This shift has generated insecurity and alienation among the owners and employees of these vital social gathering spaces. By framing Javastraat as a space in flux, we analyze the experiences of these stakeholders through the lens of social navigation and explore how these gastronomic professionals are navigating shifting food cultures and urban environments.

Keywords

Amsterdam; food gentrification; foodscape; gastronomic professionals; migration; social navigation

1. Introduction

Scholars from various disciplines, including sociology (Steigemann, 2020; Zukin, 2008, 2009), anthropology (Klein & Murcott, 2014), the life sciences (Barnhill & Bonotti, 2022; Bonotti & Barnhill, 2022), and human geography (Alkon et al., 2020; Lütke & Jäger, 2021), have, increasingly, been exploring the connection between food and urban spaces and examining how food influences and shapes urban experiences.

Research in urban food studies spans a wide range of topics from food access and security to questions of identity and belonging (Sbicca, 2018). Food is often also central to discussions of culture, ethnicity, and race, and research that critically addresses structural inequalities (Skinner et al., 2016), such as “food apartheid” (Gripper et al., 2022). It has even been studied as a means of establishing encounters (Low & Lynn-Ee Ho, 2018), building community, and signaling distinction (Zukin, 2008). More recent work has expanded on these discussions to include the sensory aspects of food, exploring how food practices engage the body and influence perceptions of urban space (Degen, 2008; Fiore, 2021).

This article builds upon these critical discussions by analyzing motion within the gastronomic sector in urban Europe, offering a focused contribution to the evolving understanding of food gentrification. Though still an emerging subfield that is predominantly US-oriented, food gentrification has proven to be a compelling lens for examining the active role of food in urban transformation. Drawing on the foundational pillars of gentrification—capital, culture, and policy (Lees et al., 2016)—scholars have shown that food is not merely entangled with urban change but frequently serves as a key catalyst (Sbicca et al., 2020; Zukin, 2008). Research also highlights how the vibrancy and appeal of urban spaces are closely tied to the cultural and social significance of food, the blending of local and global culinary practices, and the place-specific dynamics of food production, distribution, and consumption (Bonotti & Barnhill, 2022). Informed by interdisciplinary approaches, food gentrification scholarship is continuing to reveal how food shapes urban restructuring and opens new avenues for understanding contemporary forms of gentrification that extend beyond housing.

Research on food gentrification has underscored the central role of class, particularly through the figure of the “foodie,” a middle-class consumer in search of “exotic” and “authentic” culinary experiences (Lütke & Jäger, 2021). Often associated with the “creative class” (Florida, 2002), these food enthusiasts leverage food’s cultural capital to distinguish themselves from mainstream consumer culture (Johnston & Baumann, 2015). While such pursuits may enhance the vibrancy and perceived diversity of urban foodscapes, they also contribute to cultural alienation, social exclusion, and—as numerous studies have shown—physical displacement (Polat, 2020; Zukin, 2009). Beyond individual consumer practices, scholars have examined how food is instrumentalized within broader urban development strategies aimed at global competitiveness. Particularly in the US context, municipal actors have been shown to capitalize on food’s cultural appeal to increase property values and rebrand local food cultures. These strategies frequently target affluent groups, such as global elites, tech workers, expatriates, and foodies themselves, who serve as key agents in the consumer-driven processes of food gentrification (Alkon & Cadji, 2020; Joassart-Marcelli, 2021; Martin, 2020).

Moreover, scholarship on food gentrification has increasingly engaged with the intersections of race, ethnicity, and food in order to address a critical gap in the literature that is also the central concern of this article. A growing body of research has documented the proliferation of upscale restaurants, artisanal cafés, and boutique-style food shops in historically marginalized neighborhoods—a trend frequently linked to the influx of more affluent and culturally capital-rich populations (Polat, 2020; Steigemann, 2020; Zukin, 2009). Attuned to the cultural and emotional significance of food, this scholarship explores how such establishments reframe and reappropriate local and immigrant culinary traditions, reshaping both the material landscape and the social fabric of place (Fiore, 2021; Sbicca et al., 2020; Schrobrenhauser & Lütke, 2025). Amid the notable rise of food gentrification in immigrant-dense neighborhoods, Joassart-Marcelli

(2021), a leading scholar in the subfield, has gone so far as to claim that food gentrification marks the urban transformation from ethnic (though this term has been critiqued, see Steigemann, 2020) to cosmopolitan food and tastes. As noted by Phillips et al. (2014) and others (Fiore & Plate, 2021; Zukin, 2009), food gentrification often follows patterns of racial and class reconfigurations and profoundly alters the sense of place for working-class communities and communities of color: two social groups that typically possess less agency to resist the manifold pressures of food gentrification.

This article investigates food gentrification through the case study of Javastraat, a vibrant, food-centric high street in Amsterdam's historically immigrant-rich Indische Buurt neighborhood. Widely recognized as a key example of state-led gentrification in Europe, Javastraat has undergone profound changes over the past 15 years that are reflected in both its shifting demographic and the transformation of its food landscape. Once characterized by a strong presence of Turkish and Moroccan eateries, this well-documented foodscape (Fiore, 2021; Fiore & Plate, 2021; Sakızlıoğlu & Lees, 2020) has been gradually transformed into a cosmopolitan ideal of "world shops" (Eigen Haard et al., 2008). This state-led redevelopment has displaced many Turkish and Moroccan businesses, and there is mounting pressure on the remaining immigrant/ethnic and working-class restaurants and food shops to adapt their menus to meet the preferences of the increasingly dominant gentrifying class, which includes the incoming middle-class residents, affluent visitors, elite workers, and, of course, the foodies (Dziduch, 2023; Fiore, 2021). While this shift is often framed as an entrepreneurial success, it has severely affected the local food scene and caused widespread insecurity and alienation among non-European gastronomic professionals.

Recent developments along Javastraat further support this argument. As the municipality, media, affluent residents, and business owners push for a "more sustainable" and "queerer" vision of Javastraat, the area is currently being shaped into an emblem of elusive cosmopolitanism (Joassart-Marcelli, 2021). This transformation is partially evidenced by the planning documents, university proposals ("Making Indische Buurt healthier, greener and safer"; Hanze University of Applied Sciences, 2023; van Malsen & de Vreeze, 2020), and urban gardening initiatives (Urban Nature Atlas, 2021), all of which position Javastraat as a testing ground for "sustainability." It is also reflected in the prominent display of LGBTQ+ flags, which symbolize inclusivity and queerness, throughout the area (Dziduch, 2023). While these gestures, installed by landlords and local restaurant associations, may reflect progressive values and urban openness (Wenzel et al., 2024), they also represent a confusing and, at times, unsettling shift for immigrant business owners and employees. For many, the push for sustainability and LGBTQ+ friendliness introduces changes that are difficult to comprehend and navigate. Indeed, the spatial dimensions of queerness and their entanglements with processes of (food) gentrification have also emerged as an increasingly important focus in critical urban scholarship that documents these intersections across various urban contexts (Cofield, 2021; Hess, 2019).

This sense of flux and unease among the immigrant business owners and employees has been further intensified by ongoing crises and shifting political conditions including the aftermath of the Covid-19 pandemic, rising inflation, increasing political hostility toward migration, and mounting concerns about urban decay (e.g., drug abuse and homelessness). Within these overlapping dynamics, gastronomic work in Amsterdam's Javastraat remains fraught with challenges, especially for people who are already grappling with the pressure of food gentrification. In this context, Javastraat emerges as a contested site of negotiation, where competing imaginaries of identity, belonging, and progress intersect with the everyday realities of entrepreneurial survival amid an evolving foodscape.

By framing Javastraat as a space in flux and examining the experiences of restaurant/food shop owners and employees in non-European-identifying gastronomy through the lens of “social navigation” (Vigh, 2006, 2009), this study illuminates how contemporary expressions of food gentrification are experienced, lived, and negotiated in daily practice. It argues, and seeks to demonstrate, that social navigation provides a timely and generative framework for understanding the lived realities of Javastraat. Grounded in the concept of “motion within motion” (Vigh, 2009, p. 420), it emphasizes the fluidity and instability of contemporary urban (food) spaces, and the real and imagined movements that shape how individuals live, work, and, most importantly, navigate within them.

Social navigation transcends conventional understandings of agency by emphasizing the dynamic interplay of social, cultural, material, and spatial forces (see Chouinard, 1997; Gregory, 1994). As such, it offers a broader analytical framework for examining food gentrification, revealing its entanglements with other transformative forces in the urban landscape, including crisis-driven redevelopment, shifting cosmopolitan ideals, and evolving urban imaginaries. Focusing on social navigation not only underscores the precarity of gentrifying urban environments but also exposes the mechanisms by which these transformations are sustained and, in cases like Javastraat, intensified. At the same time, it foregrounds the everyday strategies employed by those with constrained agency—particularly immigrant restaurant and food shop owners—as they adapt to unstable and exclusionary urban conditions. In this way, social navigation contributes meaningfully to the growing literature at the intersection of food gentrification, race, and ethnicity, offering a valuable conceptual toolkit for understanding how actors negotiate the shift from “ethnic” to “cosmopolitan” tastes (Joassart-Marcelli, 2021).

This leads to two central questions guiding this exploratory study: How are the owners and employees of non-European-identifying gastronomic businesses on Amsterdam’s Javastraat navigating processes of food gentrification, and in what ways are their navigational pursuits responding and to aligning with the street’s evolving socio-spatial dynamics?

In the following sections, we outline the conceptual framework and methodology for the empirical study of Javastraat in Amsterdam. The article’s core is based on navigational accounts from gastronomic professionals from non-European restaurants and food shops on Javastraat.

2. Navigating Food Gentrification

2.1. Urban Foodscapes and Food Gentrification

This study contributes to critical urban food studies by engaging with recent scholarship on urban foodscapes (Joassart-Marcelli, 2021; Steigemann, 2020). The concept of urban foodscapes emphasizes the implications of “cultural landscapes” and, in so doing, goes beyond mere physical descriptions of space (Joassart-Marcelli, 2021). Research on foodscapes and urban transformation highlights the symbolic, political, and ideological dimensions that emerge at the intersection of food and space, illustrating how foodscapes are deeply interwoven with the complexities of everyday life and its ongoing transformation (Low & Lynn-Ee Ho, 2018). The interconnections among food, culture (as identity), the body (as sustenance and emotional expression), and place (as a site of community and power) make the urban foodscape a powerful lens through which to analyze lived experience (Bonotti & Barnhill, 2022). As Johnston and

Baumann (2015), assert, urban foodscapes are “a dynamic social construction that relates food to places, people, meanings, *and* material processes [emphasis in original]” (p. 3). Joassart-Marcelli (2021) further elaborates that foodscapes encompass the “social, political, economic, and cultural setting in which food acquires meaning and value” (p. 6), including “lived and imagined places in which inhabitants...relate to each other through food in material and sensory ways” (p. 23). In short, urban foodscapes reflect the fluidity of contemporary urban space, shaped by shifting power relations, cultural identities, and everyday practices.

The connection between urban foodscapes and food gentrification is a compelling, if yet underexplored, aspect of the foodscape literature and a growing subcategory of gentrification research (Alkon et al., 2020; Sbicca, 2018). Work in this area also intersects with the subfield of retail gentrification, a dynamic but less food-centered strand of scholarship (Hubbard, 2017; Kasinitz & Zukin, 2015). The foodscape perspective is particularly useful for examining locally felt power shifts, that is, dynamics that become especially clear when municipal agendas are actively driving the food gentrification process, as in Amsterdam’s Javastraat. Thus, an approach that combines foodscapes and food gentrification offers a unique, place-based view into the intricate interplay between urban policy, cultural transformation, and the lived realities of the people navigating these shifts. It foregrounds the local dimension of the neoliberal urban agenda, including the “creative city” paradigm (Florida, 2002) and global urban competition: developments that resist straightforward classification as wholly positive or negative.

Research into food gentrification has demonstrated that “food is often a central way that cities brand themselves as ripe for redevelopment” (Alkon & Cadji, 2020, p. 119). This branding logic, coupled with the real estate market’s pursuit of profit, has spurred the proliferation of exclusive food halls (Bourlessas et al., 2021), upscale food markets (Polat, 2020), and trendy food truck gatherings (Lütke & Lemon, 2021), all activities designed to revitalize neighborhoods and boost property values (Joassart-Marcelli, 2021). In this competitive landscape, cities are now marketing themselves through food and related buzzwords like “authentic,” “diverse,” and “sustainable” to attract upscale businesses, culturally savvy consumers, and elite workers (Alkon & Cadji, 2020). However, the quest for cosmopolitan foodscapes, which Alkon and Cadji (2020) define as “middle-class consumer destinations...reliant on new residents’ higher levels of disposable income” (p. 110), often results in alienation and displacement. As Zukin (2008) observes, the gentrifiers’ “desire for alternative foods, both gourmet and organic, and for ‘middle class’ shopping areas encourages a dynamic of urban redevelopment that displaces working-class and ethnic minority consumers” (p. 724).

Studies linking foodscapes to food gentrification examine how the material, symbolic, and cultural aspects of space evolve, highlighting both social and physical shifts. Emerging literature indicates that food gentrification becomes most visible in spaces where diverse socialization patterns converge (Degen, 2008; Fiore, 2021; Joassart-Marcelli, 2021). In Europe, this is particularly evident in urban areas with significant immigrant populations or prominent “ethnic” food cultures, such as Amsterdam’s Indische Buurt, which have become increasingly affected by gentrification (Sakızlıoğlu & Lees, 2020). However, the impact of food gentrification on urban residents, especially displacement, remains largely unexplored. Much of the existing research focuses on the desires of foodies and other affluent groups, leaving a gap in our understanding of the experiences of the original residents, workers, and small-scale entrepreneurs. As Joassart-Marcelli (2021) points out, “few researchers have focused on the geographic encounters between the producers and consumers of ethnic food and how the symbolic nature of ethnic food and its everyday material reality are interwoven” (p. 30). This study addresses this gap by linking foodscapes to the concept of social navigation:

a creative lens that illuminates how individuals with limited economic and political power navigate shifting and unstable social environments, such as that emerging from the gentrifying foodscape of Javastraat.

2.2. Social Navigation

As the 21st century progressed, the concept of “navigation” gradually gained traction in the fields of anthropology (Johnson-Hanks, 2002), migrant studies (Schapendonk, 2018; Triandafyllidou, 2019), and human geography (McQuaid et al., 2021; November et al., 2010). Despite its increased use, the term remains largely under-theorized. However, one notable study on the topic is Vigh’s (2006, 2009) anthropological work on “social navigation,” which presents a compelling case for the concept. Drawing on extensive fieldwork with marginalized populations in Bissau (the conflict-stricken capital of Guinea-Bissau, West Africa) and sans-papier migrants in Lisbon (the vibrant capital of Portugal, Europe), Vigh conceives of social navigation as a response to the fluidity and perceived instability of urban social environments. Using the analogy of navigation (from the Latin word *navigare*, meaning “to sail”), he introduces the term “seascape” to capture how urban environments, especially those outside dominant power structures, are in a constant state of flux (Vigh, 2009, p. 429). In Vigh’s view, urban social environments are never static but always emergent, requiring continuous movement, adaptation, and recalibration from those living and working within them.

What makes Vigh’s concept of social navigation particularly powerful is its emphasis on the dynamic interaction between agents and the environments they navigate. For Vigh (2009), urban life is best understood as “motion within motion” (p. 420), that is, as a continuous, reciprocal process in which both agents and social environments are in a constant state of transformation (Nunn et al., 2017). From this perspective, social navigation expands the concept of agency beyond a static, individual act, presenting it as an ongoing practice of adaptation, anticipation, and recalibration within ever-changing social landscapes. Vigh (2009) highlights how agents, attuned to the surrounding flux, engage in “tentative mappings” (p. 428), constantly negotiating the shifting forces that influence their actions. In this way, Vigh’s (2009) concept of social navigation is not only attuned to the “socially *immediate* [emphasis in original]” (p. 425) but also to “the socially *imagined* [emphasis in original]” (p. 425). Furthermore, social navigation is responsive to both the lived present and the uncertainties of the future (Jevtic & Park, 2021). This dual perspective on change and motion is not merely about physical movement through space. It is also about how agents chart their futures in environments that are often beyond their control. It involves moving through spaces governed and shaped by larger, often invisible, forces (Schapendonk, 2018; Triandafyllidou, 2019; Vigh, 2009).

In addition, the concept of social navigation provides a human-centered, motion-focused framework for understanding urban spaces in flux. As Vigh (2009) conceptualized it, social navigation is intricately attuned to power dynamics and the struggles of those with limited control over their environments, especially when they are confronted with larger forces such as urban renewal. This framework proves valuable for analyzing the experiences of immigrant restaurant/food shop owners and employees working in gentrifying urban foodscapes. While their challenges may not mirror the extreme upheaval faced by Vigh’s informants in Bissau and Lisbon, these individuals are still navigating precarious, fluid, and unpredictable urban environments. This is evident in neighborhoods like Amsterdam’s Indische Buurt, where gastronomic work is marked by constant movement, fluctuating between opportunity and threat, change and resistance. The concept of social navigation sheds light on how these gastronomic professionals are maneuvering

through a landscape that is both mutable and yielding. When applied to urban foodscapes, this framework reveals how gastronomic professionals are embedded in multiple layers of power, food desires, and urban imaginaries and have to continuously adjust to the shifting conditions. As Vigh (2009) notes, social navigation is particularly valuable for understanding how individuals in liminal positions, those in constant motion, engage with the forces attempting to shape their lives (Çağlar & Glick Schiller, 2018).

2.3. Making Amsterdam's Javastraat

The Javastraat in Amsterdam's Indische Buurt (see Figure 1) vividly illustrates the transformative effects of (food) gentrification and has garnered significant attention from urban scholars (Bronsvoort & Uitermark, 2022; Fiore & Plate, 2021; Hagemans et al., 2015; Sakızlıoğlu & Lees, 2020) and social advocacy groups (Dziduch, 2023). Over the past 15 years, particularly after two waves of gentrification in 2009 and 2016, the once gritty and immigrant-dominated neighborhood has been repositioned as a symbol of globalized urban chic. Formerly described as the neighborhood's "commercial artery" (Fiore & Plate, 2021, p. 392), Javastraat is now lined with upscale boutiques, artisanal cafés, and pricy restaurants, which have replaced the working-class shops and eateries that once defined the area. While local authorities and newer residents often frame this transformation as a success, the narrative of revitalization masks a more complex reality of displacement and alienation. Many businesses owned by Turkish and Moroccan immigrants have disappeared (Fiore, 2021; Sezer & Maldonado, 2017) and since been replaced by establishments that primarily cater to middle-class locals, tourists, and expatriates. Long stigmatized as an "immigrant ghetto" (Fiore & Plate, 2021, p. 393), the area is now promoted as a model of "multiculturalism," albeit a sanitized, gentrified version designed to appeal to a Whiter, wealthier demographic. As Dziduch (2023) notes, "People who are so present on Javastraat—immigrants, mostly Turkish and Moroccan—do not actually live on the street anymore." During gentrification, although businesses may remain, "the residents leave for poorer areas," with the result that "[t]he neighborhood can become false" (quote from Noam, an Israeli student living on Javastraat, interviewed by Dziduch, 2023).

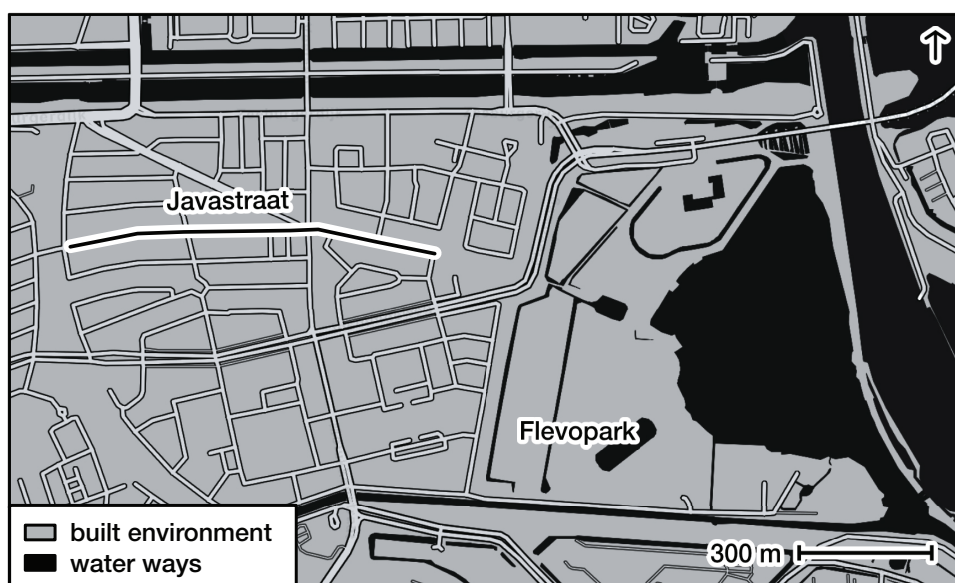


Figure 1. Map of the Indische Buurt neighborhood and the Javastraat. Source: ArcGIS Online, own adaptation.

This gentrification, on both the residential and commercial levels, was driven by the institutional idea that the Javastraat should be a space of “world shops” (Eigen Haard et al., 2008), a marketplace where difference was commodified for both capitalist and symbolic purposes (Fiore & Plate, 2021). Diversity, in this context, was not an honest reflection of the area’s demographic composition, but rather an intentional “corrective” to a perceived undesirable, low-income, “non-native” population that was viewed as an obstacle to urban development and rent-gap capitalism (Fiore & Plate, 2021, p. 393; see also van Eck et al., 2020). The city’s intervention kicked off with the restructuring of housing and tenure, followed by a second phase focused on the regeneration of Javastraat’s commercial spaces, particularly those with Turkish and Moroccan appearance (Fiore, 2021; Sezer & Maldonado, 2017). This commercial rebranding, which is the focus of this article, was based on an ethnocentric, middle-class, and White narrative of otherness. The goal was to align the neighborhood with the tastes of the Dutch middle class and visitors and create a curated aesthetic of diversity and exoticism that was heavily rooted in stereotypes. As a result, Javastraat became a “controlled and aestheticized ‘collection of otherness’” (Fiore & Plate, 2021, p. 397), a form of governmentality that positioned the domestication of ethnic communities as a prerequisite for their inclusion in a cosmopolitan society.

Recently, new initiatives and planning documents have emerged that position Indische Buurt as a potential hub for sustainability and urban greening (Hanze University of Applied Sciences, 2023). In addition, Javastraat has undergone another transformation, this time under the banner of queer friendliness. Following an incident in April 2020, where a gay couple was insulted in Indische Buurt and its surroundings (Dziduch, 2023), residents and gastronomic organizations began to display rainbow flags and then commissioned a mural to signal solidarity with the LGBTQ+ community (Wenzel et al., 2024). While these symbols were intended to express openness and pluralism, for many original residents, shopkeepers, and workers who had already weathered earlier waves of gentrification, they represented yet another sign of a top-down change that was unmediated and imposed from “above.”

3. Methods: Focused Ethnography

This exploratory study employs a mixed-methods approach based on qualitative fieldwork conducted on Amsterdam’s Javastraat in January and February 2023. The research includes observational walks, interviews with immigrant restaurant and food shop owners and employees, photographic documentation, and an initial mapping of shop fronts along the high street. These methods were complemented by a guided tour with a local expert on the area’s gentrification history. Grounded in focused ethnography, the empirical material is further enriched by autoethnographic reflections and a group discussion with the local expert that offered deeper insight into the dynamics at play.

Focused ethnography provides a flexible and pragmatic approach to ethnographic research that contributes to the expanding body of “experimental, values-based, and critical forms of ethnography” (Wall, 2015). By challenging traditional anthropological boundaries, it departs from the assumption that ethnography must be inherently holistic, descriptive, and resource-intensive (Trundle & Phillips, 2023). Grounded in the belief that “we no longer need to travel to far-away places to study culture” (Mayan, 2009, p. 37), focused ethnography promotes a more targeted methodology that addresses specific, pre-defined issues within clearly delineated contexts and often concentrates on subcultural groups. More narrowly defined and manageable in scope than conventional ethnography (Knoblauch, 2005), it has proven particularly effective

for studying fragmented, specialized, and fast-paced social environments, such as nurseries (Trundle & Phillips, 2023), and gentrifying urban foodscapes (Polat, 2020).

Focused ethnography emphasizes shared cultural understandings within specific social contexts (Knoblauch, 2005). It is typically characterized by short-term or intermittent field visits, a clearly defined research question, and a researcher who possesses insider knowledge of the cultural group under study (Higginbottom et al., 2013). This approach often incorporates intensive data collection methods, such as video, photography, or audio recordings (Knoblauch, 2005), and tends to concentrate on small, well-defined sub-populations, frequently in collaboration with local field experts. While its brief and concentrated nature has attracted critique, in particular concerning potential data limitations and questions of trustworthiness (Wall, 2015), this study argues, in line with a substantial body of focused ethnography literature (see Trundle & Phillips, 2023), that it remains a valuable and generative method for producing exploratory insights into food gentrification. As both Wall (2015) and Knoblauch (2005) contend, ethnography is defined not by the quantity of data collected but by the depth of cultural understanding it yields.

Building on the central research questions and the extensive body of prior studies on Indische Buurt (see Section 2.3), this study employs focused ethnography to investigate the lived experiences of immigrant restaurant and food shop owners and employees on Javastraat, our primary case study. To engage with these gastronomic professionals, the local foodscape was surveyed with particular attention paid to national and/or regional self-representations, as expressed through cuisines, food advertisements, and devotional objects such as national flags, religious symbols, and other culturally significant imagery (see Metzger, 2017; Table 1). This approach acknowledges the strategic self-positioning of restaurants and food shops on Javastraat and has also proven effective in initiating conversations. Given the small-scale and exploratory nature of this study, the selection was further narrowed to food establishments exhibiting non-European cultural affiliations and, therefore, presumed to be particularly vulnerable to the negative impacts of food gentrification in Europe (Polat, 2020; Steigemann, 2020; Stock, 2014).

Following this initial pre-selection, all restaurants and food shops along Javastraat exhibiting non-European aesthetic codes were systematically mapped and approached by the researchers in situ during working hours. This “visceral” and sequential approach enabled the identification and engagement of potential interview partners, ultimately resulting in six semi-structured narrative interviews with immigrant gastronomic professionals (see Table 1). These interviews were crucial for capturing local perceptions and adaptation strategies that, reflecting Vigh’s (2009) notion of “motion within motion” (p. 420), take center stage in the following sections. The relatively small number of interviews, as well as the inclusion of restaurant/food shop employees, reflects several refusals from restaurant/food shop owners, largely due to time constraints, as they were often absent or occupied with competing service or managerial duties. Nonetheless, including employees, who remain deeply attuned to local transformations despite often lacking formal decision-making power, proved highly insightful and enriching. Their participation introduced an important interpretive layer to the adapted framework of social navigation, expanding and deepening our analytical understanding of the diverse ways in which (immigrant) gastronomic professionals socially navigate the shifting realities of culinary work along Amsterdam’s Javastraat.

The Interviews, conducted in English, were transcribed verbatim and then lightly edited for readability and clarity. Their lengths varied, reflecting the rhythms and constraints of gastronomic work within the context

of food gentrification. As a result, some conversations allowed for deeper reflections on ongoing changes and adaptive strategies, while others were more constrained in scope. To interpret the interviews, we used thematic analysis, the well-established method for identifying, organizing, and interpreting patterns or “themes” within qualitative data (Nowell et al., 2017). Valued for its flexibility, thematic analysis enables topics and codes to emerge organically, allowing room for diverse perspectives and unexpected insights. It provides an open and responsive approach to qualitative inquiry, an approach that is particularly attuned

Table 1. Overview of the interviewed gastronomic professionals and their businesses. To protect the anonymity of participants, all interviewees have been assigned pseudonyms that reflect their unique migration histories.

Cultural Affiliation	Business Description + Staff and Special Features	Interviewee + Length	Demographics	Professional Role + Qualifications	Motivation (Personal and Professional Drivers)
Turkish	Low-cost baklava shop catering to Turkish and Arab diaspora (est. 2012) One employee; owner and son also assist	Adama (M) 50 min	Born 2004 2nd generation Turkish descent, born in Amsterdam	Employee High school student	To cover living costs, feels emotionally obliged to help in the family business
Moroccan	Traditional couscous restaurant (est. 2016) 17 employees, mostly women; two female co-owners; one of two locations	Averde (F) 27 min	Born 1995 Moroccan descent	Employee Trained chef, aspiring barber	To cover living costs, feels emotionally attached to supporting the restaurant
Pakistani	Niche supermarket with trendy Asian street food bar (est. 1997) Run by owner with help from brother and brother-in-law	Bilal (M) 35 min	Born 1975 1st generation Pakistani descent	Owner Experienced shopkeeper, high school graduate	Inherited and continues the family business
Syrian	Baklava and clothing shop (est. 2023) All employees are of Syrian descent	Firas (M) 8 min	Born ~1990 1st generation Syrian descent	Owner	Driven by diaspora support, feels a moral obligation to the Syrian community
Indonesian	Upscale fusion restaurant (est. 2021) 15 employees (six full-time); one of two locations	Eka (F) 12 min	Born 1985 1st generation Indonesian descent	Employee Spokesperson, law degree	Advocacy for the Indonesian diaspora in Amsterdam
Indonesian	Mid-range restaurant with popular dishes (est. 2020) One of four branches	Sahil (M) 32 min	Born 2001 1st generation Born in Amsterdam, raised in Indonesia	Employee Accounting student	To cover living costs, seeks integration into Dutch society

Note: To protect the anonymity of participants, all interviewees have been assigned pseudonyms that reflect their unique migration histories.

to participants' lived experiences, as well as their varied views, behaviors, and practices (Clarke & Braun, 2017). This adaptability makes thematic analysis especially well-suited to exploratory research and iterative methods of data collection and interpretation, as employed in this study. In our case, it proved a productive complement to focused ethnography that facilitated the inductive development of thematic codes related to social navigation (Vigh, 2009), food gentrification, and the everyday vibrancy of gastronomic life on Javastraat. Given the relatively small number of interviews and the emergent character of the categories, we opted for manual coding rather than using specialized software such as MAXQDA.

4. Moving and Working Through the Foodscape of Amsterdam's Javastraat

Guided by scholarship from the fields of food gentrification and urban foodscape research, the following three subsections, which comprise the empirical core of this article, investigate gastronomic life on Javastraat through the lens of social navigation. In Section 4.1, we demonstrate how food gentrification generates uncertainty and a persistent sense of motion among immigrant gastronomic professionals. In Section 4.2, we consider how this uncertainty prompts strategic, finely tuned adjustments to menus and marketing practices. Then, in Section 4.3, we explore how the notion of motion itself is reappropriated by the interviewees as a guiding principle and ultimately becomes their *modus operandi*.

4.1. *"They Will Make It Center": Inflicting Uncertainty, Installing Motion*

The interviews reflect media and planning discourses about Indische Buurt and Javastraat, highlighting significant material and social changes in the area. However, they diverge from official urban renewal reports in that they offer a bleaker, more nuanced view of the effects of food gentrification. Unlike the official narrative, the immigrant restaurant/food shop owners and employees interviewed present a complex and often ambiguous picture of the change (van Eck et al., 2020). They emphasize how the atmosphere (or sense of place) in Javastraat and its surroundings has shifted under the influence of the Dutch middle class, affluent expats, and visitors. While these shifts have brought new opportunities and encounters, they have also led to losses, including the dissolution of social networks, the erosion of a familiar social environment, and deep feelings of alienation. This sense of displacement, a regular feature of (food) gentrification, is most acutely felt by minority groups and those already marginalized by discrimination or racism. This has been consistently demonstrated in research from both the US (Alkon et al., 2020) and Europe (Fiore, 2021; Polat, 2020).

Building on existing literature regarding these negative effects of (food) gentrification, an issue that remains critically relevant, especially in the face of rising right-wing sentiment in the US and Europe, this study deepens our understanding of food gentrification by focusing on the lived life during urban motion and subsequent individual countermotion situations. As previously mentioned, rather than reinforcing the conventional narrative of social disenfranchisement and marginalization, the interviews resonate more closely with Vigh's (2006, 2009) concept of "social navigation." The immigrant restaurant/food shop owners and employees interviewed did not consider gentrification a fixed endpoint or as heralding an inevitable conclusion for their businesses or livelihoods, despite the visible disappearance of many Turkish and Moroccan eateries. Instead, they described experiencing food gentrification as an ongoing, dynamic force that demands constant adjustment and repositioning. As Vigh (2009) compellingly illustrates, the process of "social navigation" requires that individuals remain attuned to shifting environments, reading and responding

to the signals of power, resources, and changing identities around them. For the gastronomic professionals on Javastraat, the high street is not a stable, predictable space but a site of continuous transformation and flux: a space where survival and success hinge on their ability to “navigate” the ever-changing social, economic, and cultural urban foodscape.

This sense of unrest and motion, evident in the interviews and palpable in the observed rhythms of the street (see Section 3), is particularly pronounced in the accounts of long-time restaurant employees like Adama and Averde, who live in or near Indische Buurt and have been embedded in Javastraat for years. Their lived experiences offer intimate insight into the intersection of food gentrification and social navigation that is the central theme of this study. Adama, a baker at a Turkish baklava shop, and Averde, an employee at a Moroccan couscous restaurant, reflect on the social and material transformations of the Javastraat, highlighting the challenges of operating in such a shifting and fluctuating environment. They emphasize how the simultaneous influx of capital and new sensibilities brought by newcomers is reshaping the street. Averde referred to these individuals as “young and rich people” (p. 5), while Adama spoke of affluent “Holland people” (pp. 7, 8). Both noted how the arrival of the Dutch middle class, particularly real estate investors, has altered the neighborhood’s social and aesthetic topography. These shifts introduce new “place gestures” (Degen, 2008, p. 49) that contrast starkly with the area’s previous social atmosphere and generate feelings of uncertainty, disbelief, and most notably, a profound sense of motion. For Averde, motion primarily originates from a change in dining habits, noting that “Dutch people only eat warm in the evenings” (p. 9). For Adama, uncertainty, motion, mobility, and the need to adapt to new social and spatial realities arise from the increasing visibility of LGBTQ+ flags on the street, as well as their presence in online maps and news outlets:

The area was more like...how can I put it? A ghetto? It has really developed since then. And now there are a lot of Holland people. More than Turkish or Moroccan people. People never expected, like the flags, the LGBTQ+ flags, and so on. Nobody thought that this was even possible in this area. (Adama, p. 7)

What stands out in this context is not only that both interviewees seem to adopt and incorporate stigmatizing attitudes and discourses, such as the overly problematic notion of the “ghetto” (for further critical reflections on the term and the adoption of stigmatizing attitudes, see Göle, 2003; Wacquant, 2012), but also the way Adama and Averde make sense of gentrification, particularly in terms of the nature of local food gentrification. Contrary to expectations, they don’t describe gentrification as a phenomenon of the past, despite the two waves of gentrification already experienced in the neighborhood. For them, food gentrification is very much a present reality, one that will continue to escalate and intensify in the near future. This sentiment, shared by most of the interviewees, is encapsulated in Averde’s forecast. As quoted in the title of this article, she predicted that “I think that actually this part is not center yet, but they got to make it....So yeah, I think this street is really going to be a central street with more shops and will just explode even more” (Averde, p. 5). What is striking about this statement is both the anticipated change and the way Averde describes the drivers and potential developments of food gentrification. For both Averde and the other interview participants, these forces remain a distant, almost shadowy “them,” a powerful but elusive presence that must be adapted to (Vigh, 2009). In this context, “them” refers to the Amsterdam municipality, the local planning council, and the new affluent residents (the gentrifying class) who now dominate the street. These institutions and individuals have become increasingly prominent in the assessments of immigrant restaurant/food shop owners and employees, yet they remain opaque and

undefined, amplifying the climate of uncertainty. Yet, as the theory of social navigation predicts, Averde, Adama, and the other gastronomic professionals on Javastraat do not stand still in the face of this uncertainty and perceived socio-material motion. They move and adapt in dynamic environments, reading and responding to the bodies and people they encounter—the White Dutch middle-class residents, expats, affluent visitors, and, of course, the foodies.

4.2. Dialing Up and Dialing Down Sweetness: Anticipating Food Gentrification

The influx of White Dutch middle-class residents, expats, and affluent visitors has dramatically transformed housing prices, infrastructure, and the overall atmosphere of Javastraat and Indische Buurt, introducing new demographics, aesthetics, and shifting food demands. In turn, this demographic shift has reshaped the local food scene, compelling gastronomic professionals to continuously adapt their offerings. Our interviews indicate how the local immigrant food scene navigates the fluctuating “seascape” of food and taste (Vigh, 2009, p. 429) by becoming more attuned to the flavors, textures, and culinary practices favored by wealthier, health-conscious (foodie) patrons. In this context, food becomes a tool of negotiation that is constantly being redefined to meet evolving desires. These negotiations are particularly evident in how “ethnic” and “immigrant” foods are altered to meet the expectations of more affluent customers in a process that often generates tension with the cultural norms and practices of the professionals who prepare them. The interviews reveal the complexities of navigating shifting tastes and cultural identities, highlighting how the “gentrification of food” (Sbicca, 2018, p. 6) sets the local food scene in motion. This sense of flux is expressed through feelings of alienation and was especially evident in the experiences of Sahil and Firas, two immigrant employees with pragmatic perspectives on Indische Buurt who are enacting social navigation through differing interpretations of “sweetness.”

Sahil, a young Indonesian employee at an Indonesian restaurant, explains that he and his colleagues intentionally sweeten the Indonesian dishes they serve, despite their personal dislike for the sweetness and its alienating effect on their Indonesian peers. They have made this adjustment because Dutch middle-class patrons—now their primary audience—are accustomed to the sweeter version of Indonesian food that is found in supermarkets like Albert Heijn. However, this process also carries both economic and cultural implications. Sahil points out that sugar is scarce and expensive in Indonesia, making it less common in traditional cooking, while in the Netherlands, sugar is cheap, making it a viable option for adaptation. He explains:

In Indonesia, we prefer spicy food, and sugar is expensive, so we don’t use much. But here, sugar is cheap, and Dutch people like it sweet. When I first came, I thought, “This food is too sweet and not spicy!” (Sahil, p. 3)

For Sahil, sweetening the dishes is not merely about catering to Dutch tastes; it is also about making Indonesian cuisine legible within a Dutch culinary context—an act of cultural assimilation mediated through food. This process of adaptation involves linguistic and cultural domestication, where terms like “spicy rice” or “curry rice” are used to simplify and align Indonesian dishes with Dutch expectations, reducing the original complexity of the cuisine to fit a more familiar and consumable framework. In relation to the social navigation concept, one could argue that the strategy of sweetening, adopted by Sahil and his colleagues, represents a pragmatic attunement to the socially and economically dominant tastes of the gentrifying class and, thus, a means to stay afloat in the ever-changing sea of desires shaped by food gentrification.

While Sahil's strategy of sweetening dishes to suit the Dutch palate is adaptive and utilitarian, other gastronomic professionals, such as Firas, a Syrian entrepreneur who operates both a clothing store and a shop selling Syrian sweets, have taken the opposite approach. Instead of sweetening his products, Firas promotes a less sugary version of traditional Syrian sweets, particularly baklava, setting it apart from the sweeter Turkish varieties sold elsewhere. He intentionally reduces the sugar content to challenge the perception of baklava as overly sugary and unhealthy and, thus, tap into the urban middle class's growing interest in healthier, more "authentic" food options (Zukin, 2008). He explains:

Syrian people love pistachios. We try to make it less sweet because the original food is too sweet—people from Syria like a lot of sugar. So here, we reduce the sweetness as much as possible so other people can enjoy it too. (Firas, p. 2)

Firas's approach is not just market-driven; it is also a cultural assertion. He is attempting to introduce something unique to the neighborhood, to represent Syrian culture while challenging common negative stereotypes about non-European foods and culture in Dutch society, such as "the perceived uniformity of [the] ethnic businesses in terms of their physical appeal and offer of products" (van Eck et al., 2020, p. 3308). Like Sahil's strategy, Firas's food reflects a deeper cultural negotiation and serves as both a symbol of pride and resistance. Firas describes his strategy as follows:

I don't want to be the best. It's about complementing each other. Before I started, I noticed there was no place in the area serving Syrian food or sweets in a good way....It's something different, something no one else is doing. (Firas, p. 2)

In this, Firas illustrates the manifold ways in which immigrant restaurant/food shop owners and employees draw on their social and cultural understandings and capital to navigate the fluctuating environment of Javastraat. Thus, these accounts of gastronomic work highlight how food gentrification is met with a variety of nuanced, often emotionally charged responses and adaptive strategies of "survival." Social navigation theory sheds light on the reciprocal and often finely tuned adjustments individuals make in response to changing social environments. Yet the concept reveals even more: it highlights how social and spatial motions both arise from and are carried out by agents compelled to act amid movement and uncertainty.

4.3. Sourcing Freshness: Utilizing Motion

At the time of the interviews, the lingering effects of the Covid-19 pandemic and the emerging impact of the war in Ukraine were palpable in Javastraat. Inflation had become a major concern, exacerbated by rising prices for food ingredients and supply shortages affecting eateries, shops, and restaurants. These shifts not only increased the cost of food but also heightened the need for stability. In response, the gastronomic professionals we interviewed had developed strategies to weatherproof their businesses against these challenges that commonly involved two main approaches, sometimes used independently but often interwoven. The first strategy focused on culinary and aesthetic experimentation with a view to adapting dishes to the tastes of the new, affluent, predominantly "White clientele." This "see what sticks" approach involved trial and error to gauge current demand and future trends. The second strategy involved building alliances with more powerful local actors, such as food bloggers, planning officials, and influential food suppliers, who could provide resources and insight into future developments on the street and, thus, strengthen the restaurant's competitive edge.

In this regard, the accounts provided by Eka and Bilal stand out. Eka, a senior employee at an upscale Indonesian restaurant, also oversees two other eateries owned by a fellow Indonesian immigrant, reflecting a growing entrepreneurial network within the community. Bilal, who has had a presence on Javastraat for a long time, since 1997, initially sold exotic fruits and ingredients but recently revamped his shop, prompted by a local planning initiative, to include street food and especially curries. Despite their different backgrounds, both Eka and Bilal are experimenting with new menus, food offerings, and store layouts in an attempt to stay relevant, particularly to the dominant White, middle-class consumer base. These changes can be understood as tactical tests designed to determine what works in an increasingly competitive market. This is illustrated in Bilal's statement:

A lot of young guys came in and bought up almost all the street. The area became very expensive. So you had to catch up with your ideas. A lot of things weren't running then. And now I have to figure out, "Hey, what do they like? Yeah, they like herbal things. They like small, small items, not big bags." So a lot of things changed. You have to go with the flow, basically. (Bilal, p. 2)

This focus on aesthetics, tastes, and atmospheres is driven by the need to create unique selling points, distinct offerings that set one shop apart from the others on Javastraat and in the surrounding areas. This strategy of differentiation helps businesses carve out a niche in a competitive market, often through specialized products, the activation of "authenticity," or alignment with emerging food trends popular among middle-class Whites and their foodie outposts, as well as affluent, culture-leaning expats. Trends like "clean eating" or "healthy hedonism" seem particularly appealing. As Bilal explains, "I am trying to focus on healthy foods, non-allergic foods. Not the regular foods that every shop is selling....There was not a big market for this, but we are still managing, we're changing" (p. 2). For Bilal, his competitive edge primarily comes from importing "exotic fruits," especially Pakistani mangos, which he promotes through social media and local food bloggers, positioning his products as healthy, special, and fresh. The true backbone of his business, however, lies in his carefully cultivated network of suppliers, a network his brother works on strengthening daily. This supply chain enables Bilal to offer "exotic freshness" all year-round while staying up-to-date on the shifting landscape of aesthetic and food trends.

Eka is using a similar strategy but with a different focus. While Sahil adapts Indonesian food to Dutch tastes, Eka promotes "authentic" Indonesian dishes, though she admits that she and her team do not use the spicier ingredients typical of traditional recipes. What sets the restaurant Eka is working for apart is the focus on seasonality. Eka explained that her team is developing summer-specific menu options to enhance the seasonal food experience for Javastraat customers. Unlike Bilal's year-round offerings, Eka is embracing seasonal changes by introducing fresh ingredients: "Because we try to refresh our menu every season, we also want to make a new menu for the summer. So, we want to make more fresh food, comfort food for summer, more like dessert, icy, something like that" (Eka, p. 4). Both Eka and Bilal are leveraging the changing dynamics of Javastraat and food gentrification to strengthen their positioning. Their constant menu adjustments have not only become a selling point; they have become a core survival strategy in an ever-evolving market through which these proprietors harness motion in the face of motion.

5. Discussion: Making Motion on Amsterdam's Javastraat

This study offers exploratory insight into the intersection of food gentrification and social navigation theory. By focusing on the voices and experiences of immigrant gastronomic professionals, it sheds light on the complex dynamics of food gentrification on Javastraat. Drawing on focused ethnographic research, the findings challenge the prevailing notion of “immobility”: the idea of slow, stagnant processes of change that have long shaped Western understandings of social formations and urban life. Instead, they align with Vigh's (2006, 2009) concept of social navigation, which provides the article's central theoretical framework.

Through the metaphor of “motion within motion,” social navigation rejects conventional assumptions of stability, durability, and predictability, offering an alternative vision of life as inherently fluid, unstable, and precarious. From this perspective, social environments—even in historically stable regions such as Europe and the US—are neither fixed nor foreseeable and are becoming increasingly less so. On Javastraat, the rhythms of gastronomic life mirror what Vigh (2009, p. 429) describes as a “seascape,” echoing Lefebvre's (1991) metaphor of the “convergence of waves and currents” (pp. 91–92), according to which continual adaptation to shifting realities and uncertain futures becomes not the exception but the norm.

The application of social navigation theory to the study of food gentrification as explored in this article offers a valuable framework for reconceptualizing both food gentrification and the urban landscapes it reshapes. Through the lens of social navigation, food gentrification does not emerge as a linear or static process but as a force that generates movement “of figure and ground” (Vigh, 2009, p. 433). This perspective reframes food gentrification as a dynamic, co-creative process, highlighting the complex interaction between mobile social actors and the ever-changing environments they inhabit. Rather than viewing transformation as a one-way imposition on space, it emphasizes the reciprocal, ongoing relationship between people in motion and the urban spaces that shift both with and because of them.

In this context, the experiences, practices, and strategies of immigrant gastronomic professionals on Javastraat offer a compelling illustration of social navigation in action. Situated within a classed and racialized process of urban restructuring—and possessing limited power to shape the trajectory of food gentrification—these individuals are continually compelled to adapt, anticipate, and respond to changing dynamics within the urban foodscape. They engage in the complex, embodied practice of navigation: forecasting potential outcomes, negotiating present constraints, and striving to stay afloat in an increasingly volatile urban environment. Against this backdrop, the interviews analyzed in this study yield concrete—at times unexpected—insight into the guiding research questions: how immigrant gastronomic professionals perceive, move through, and adapt to the experience of food gentrification along Amsterdam's Javastraat.

Social navigation, as revealed through the focused and limited empirical material, first becomes apparent in the persistent need to act within a shifting and seemingly unpredictable urban landscape. Despite the narrow scope, the six interviews convey a vivid sense of unrest among restaurant/food shop owners and employees. These accounts highlight how food gentrification fosters a heightened awareness of social and physical transformations within the urban foodscape and deep concerns about their potentially harmful consequences. This prevailing sense of instability and change, an insight that was not anticipated at the outset of this research, is most powerfully expressed through the recurring references to “they”: a powerful yet ambiguous external force perceived as poised to transform Javastraat into a central hub meeting the

demand for cosmopolitan food (see Section 4.1). This anticipation of externally driven change can be interpreted as a lived sensitivity to displacement and adaptation that positions navigation as both a practical strategy and a sensory-perceptive and experiential mode of survival.

The interviews suggest that the immigrant gastronomic professionals at the center of this exploratory study closely monitor social and material shifts both within and around their professional environments, while remaining attentive to potential future changes. This navigational practice—marked by the continuous anticipation of and response to change—is not an end in itself; rather, as the theory of social navigation predicts, it prompts deliberate, concrete, and tangible actions. Highly attuned to present developments and adept at projecting potential “food futures,” the interviewed immigrant restaurant/food shop owners and employees demonstrate a capacity to devise strategies—or motions—designed to cope with, counter, or capitalize on the evolving dynamics of Javastraat. The gastronomic professionals featured in this study have actively and astutely interpreted and anticipated the preferences of incoming—and increasingly dominant—gentrifying clientele. One clear example of this navigational practice is the strategic adjustment of flavor profiles, such as modifying the sweetness of dishes, to align with shifting taste expectations (see Section 4.2). These micro-level adaptations reflect a sharp awareness of the interconnected cultural and economic forces at play, illustrating how everyday culinary decisions become part of a broader, embodied response to urban transformation.

Yet, the employed framework of focused ethnography reveals even more. Strikingly, the interviewees seem to harness motion itself as a tactic. Rather than resisting change, they actively engage with and capitalize on the dynamic flows of the urban foodscape, as marked by the shifting food trends and evolving cosmopolitan ideals surrounding sustainability, queerness, and ethical consumption, in order to remain relevant and competitive. This is exemplified by the continual revision of food offerings and menus to align with the changing desires of urban elites, expats, and foodies. The immigrant gastronomic professionals interviewed seem to have structured their businesses around this logic of motion, offering seasonally adaptive menus and forging flexible alliances with suppliers to curate novel and responsive food experiences (see Section 4.3). These strategies do more than provide a competitive edge in Javastraat’s fast-paced gastronomic environment; they illustrate how these actors are not merely reacting to change but actively contributing to the high-velocity urban foodscape. In this sense, social navigation is not confined to perceiving and adapting to external pressures. Rather, it emerges as a generative force in its own right. Social navigation itself produces new forms of motion, and, with them, additional layers of complexity and uncertainty.

By bringing the experiences of immigrant gastronomic professionals to the fore, this study contributes to a more nuanced understanding of food gentrification as a site of both constraint and agency, transformation and resistance. In addition, these findings open up promising avenues for future research. For example, subsequent studies could examine how social navigation can more effectively capture the various experiences and historical contexts of immigrant communities affected by food gentrification. Furthermore, researchers might explore what we, as a society, can learn from individuals skilled in the art of social navigation in terms of ways to cope with the shifting and often uncertain boundaries of our turbulent times.

Acknowledgments

The authors would like to thank the four anonymous reviewers for their constructive and insightful comments and the editors for their thoughtful guidance throughout the publication process. We are also grateful to all

interview participants for generously sharing their time and insights into their lives and work in Javastraat. Finally, we extend our sincere thanks to Dr. Julie Davies from the University of Münster for her careful and thoughtful English proofreading.

Conflict of Interests

The authors declare no conflict of interests.

LLMs Disclosure

ChatGPT was used to improve grammar and phrasing, as both authors are non-native speakers.

References

- Alkon, A. H., & Cadji, J. (2020). Sowing seeds of displacement: Gentrification and food justice in Oakland, CA. *International Journal of Urban and Regional Research*, 44(1), 108–123. <https://doi.org/10.1111/1468-2427.12684>
- Alkon, A. H., Kato, Y., & Sbicca, J. (Eds.). (2020). *A recipe for gentrification: Food, power, and resistance in the city* (1st ed.). New York University Press.
- Barnhill, A., & Bonotti, M. (2022). *Healthy eating policy and political philosophy: A public reason approach* (1st ed.). Oxford University Press.
- Bonotti, M., & Barnhill, A. (2022). Food, gentrification and located life plans. *Food Ethics*, 7(1), Article 8. <https://doi.org/10.1007/s41055-022-00101-7>
- Bourlessas, P., Cenere, S., & Vanolo, A. (2021). The work of foodification: An analysis of food gentrification in Turin, Italy. *Urban Geography*, 43(9), 1328–1349. <https://doi.org/10.1080/02723638.2021.1927547>
- Bronsvort, I., & Uitermark, J. L. (2022). Seeing the street through Instagram. Digital platforms and the amplification of gentrification. *Urban Studies*, 59(14), 2857–2874. <https://doi.org/10.1177/00420980211046539>
- Çağlar, A., & Glick Schiller, N. (2018). *Migrants and city-making: Dispossession, displacement, and urban regeneration*. Duke University Press. <https://doi.org/10.1215/9780822372011>
- Chouinard, V. (1997). Structure and agency: Contested concepts in human geography. *Canadian Geographies/ Géographies Canadiennes*, 41(4), 363–377. <https://doi.org/10.1111/j.1541-0064.1997.tb01321.x>
- Clarke, V., & Braun, V. (2017). Thematic analysis. *The Journal of Positive Psychology*, 12(3), 297–298. <https://doi.org/10.1080/17439760.2016.1262613>
- Cofield, R. S. (2021). *Queer urban space beyond the Gayborhood: Sexuality, gentrification, and displacement in Atlanta* [Unpublished doctoral dissertation]. The Florida State University.
- Degen, M. M. (2008). *Sensing cities: Regenerating public life in Barcelona and Manchester* (1st ed.). Routledge.
- Dziduch, F. (2023, April 25). Indische Buurt's bubbling treasure: How Javastraat preserves its diverse community. *The Herring*. <https://theherring.org/2023/04/25/indische-buurts-bubbling-treasure-how-javastraat-preserves-its-diverse-community>
- Eigen Haard, Ymere, De Alliantie, & Stadsdeel Zeeburg. (2008). *Economische Versterking Javastraat e.o. Plan van Aanpak*.
- Fiore, E. (2021). *Gentrification, race and the senses: A sensory ethnography of Amsterdam's Indische Buurt and Rome's Tor Pignattara* [Unpublished doctoral dissertation]. Radboud University. <https://repository.ubn.ru.nl/handle/2066/239427>
- Fiore, E., & Plate, L. (2021). Food and white multiculturalism: Racial aesthetics of commercial gentrification in Amsterdam's Javastraat. *Space and Culture*, 24(3), 392–407. <https://doi.org/10.1177/12063312211001290>

- Florida, R. L. (2002). *The rise of the creative class*. Basic Books.
- Göle, N. (2003). The voluntary adoption of Islamic stigma symbols. *Social Research: An International Quarterly*, 70(3), 809–828. <https://doi.org/10.1353/sor.2003.0005>
- Gregory, D. (1994). *Geographical imaginations* (1st ed.). Blackwell.
- Gripper, A. B., Nethery, R., Cowger, T. L., White, M., Kawachi, I., & Adamkiewicz, G. (2022). Community solutions to food apartheid: A spatial analysis of community food-growing spaces and neighborhood demographics in Philadelphia. *Social Science & Medicine*, 310, Article 115221. <https://doi.org/10.1016/j.socscimed.2022.115221>
- Hagemans, I., Hendriks, A., Rath, J., & Zukin, S. (2015). From greengrocers to cafés: Producing social diversity in Amsterdam. In S. Zukin, P. Kasinitz, & X. Chen (Eds.), *Global cities, local streets: Everyday diversity from New York to Shanghai* (1st ed., pp. 90–119). Routledge.
- Hanze University of Applied Sciences. (2023). *Making Indische Buurt healthier, greener and safer*. <https://www.hanze.nl/en/news/2023/03/making-indische-buurt-healthier-greener-and-safer>
- Hess, D. B. (2019). Effects of gentrification and real-estate market escalation on gay neighbourhoods. *Town Planning Review*, 90(3), 229–237.
- Higginbottom, G., Pillay, J., & Boadu, N. (2013). Guidance on performing focused ethnographies with an emphasis on healthcare research. *The Qualitative Report*, 18(9), Article 17. <https://doi.org/10.46743/2160-3715/2013.1550>
- Hubbard, P. (2017). *Battle for the high street: Retail gentrification, class and disgust*. Palgrave Macmillan. <https://doi.org/10.1057/978-1-137-52153-8>
- Jevtic, J., & Park, R. (2021). Come to your senses: Ethnography of the everyday futuring. *Ethnographic Praxis in Industry Conference Proceedings*, 2021(1), 304–316. <https://doi.org/10.1111/epic.12077>
- Joassart-Marcelli, P. (2021). *The \$16 taco: Contested geographies of food, ethnicity, and gentrification*. University of Washington Press. <https://muse.jhu.edu/pub/194/monograph/book/97822>
- Johnson-Hanks, J. (2002). On the limits of life stages in ethnography: Toward a theory of vital conjunctures. *American Anthropologist*, 104(3), 865–880. <https://doi.org/10.1525/aa.2002.104.3.865>
- Johnston, J., & Baumann, S. (2015). *Foodies: Democracy and distinction in the gourmet foodscape* (2nd ed.). Routledge.
- Kasinitz, P., & Zukin, S. (2015). From “ghetto” to global: Two neighborhood shopping streets in New York City. In S. Zukin, P. Kasinitz, & X. Chen (Eds.), *Global cities, local streets: Everyday diversity from New York to Shanghai* (1st ed., pp. 29–58). Routledge.
- Klein, J., & Murcott, A. (Eds.). (2014). *Food consumption in global perspective: Essays in the anthropology of food in honour of Jack Goody* (1st ed.). Palgrave Macmillan.
- Knoblauch, H. (2005). Focused ethnography. *Forum: Qualitative Social Research*, 6(3), Article 44. <https://doi.org/10.17169/fqs-6.3.20>
- Lees, L., Shin, H. B., & López-Morales, E. (2016). *Planetary gentrification* (1st ed.). Polity.
- Lefebvre, H. (1991). *The production of space* (1st ed.). Blackwell Publishing.
- Low, K. E., & Lynn-Ee Ho, E. (2018). Eating in the city. *Food, Culture & Society*, 21(1), 2–8. <https://doi.org/10.1080/15528014.2017.1398467>
- Lütke, P., & Jäger, E. M. (2021). Food consumption in Cologne Ehrenfeld: Gentrification through gastrofication? *Urban Science*, 5(1), Article 26. <https://doi.org/10.3390/urbansci5010026>
- Lütke, P., & Lemon, R. D. (2021). Food trucks driving gentrification in Austin, Texas. *Border Crossing*, 11(1), 31–49. <https://doi.org/10.33182/bc.v11i1.1427>
- Martin, N. (2020). Savior entrepreneurs and demon developers: The role of gourmet restaurants and bars in

- the redevelopment of Durham. In A. H. Alkon, Y. Kato, & J. Sbicca (Eds.), *A recipe for gentrification: Food, power, and resistance in the city* (1st ed., pp. 54–70). New York University Press. <https://doi.org/10.18574/nyu/9781479834433.003.0003>
- Mayan, M. J. (2009). *Essentials of qualitative inquiry* (1st ed.). Routledge. <https://doi.org/10.4324/9781315429250>
- McQuaid, K., Esson, J., Gough, K. V., & Wignall, R. (2021). Navigating old age and the urban terrain: Geographies of ageing from Africa. *Progress in Human Geography*, 45(4), 814–833. <https://doi.org/10.1177/0309132520948956>
- Metzger, S. (2017). *Das Spiel um Anerkennung: Vereine mit Türkeibezug im Berliner Amateurfußball* (1st ed.). Springer Nature. <https://doi.org/10.1007/978-3-658-19261-7>
- November, V., Camacho-Hübner, E., & Latour, B. (2010). Entering a risky territory: Space in the age of digital navigation. *Environment and Planning D: Society and Space*, 28(4), 581–599. <https://doi.org/10.1068/d10409>
- Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods*, 16(1). <https://doi.org/10.1177/1609406917733847>
- Nunn, C., Gifford, S. M., McMichael, C., & Correa-Velez, I. (2017). Navigating precarious terrains: Reconceptualizing refugee-youth settlement. *Refuge*, 33(2), 45–55. <https://doi.org/10.7202/1043062ar>
- Phillips, D., Flores, L., & Henderson, J. (2014). *Development without displacement: resisting gentrification in the Bay Area*. Causa Justa :: Just Cause. <https://cjjc.org/publication/development-without-displacement-resisting-gentrification-in-the-bay-area>
- Polat, D. K. (2020). ‘Now the German comes’: The ethnic effect of gentrification in Berlin. *Ethnicities*, 20(1), 155–176. <https://doi.org/10.1177/1468796818810007>
- Sakızlıoğlu, B., & Lees, L. (2020). Commercial gentrification, ethnicity, and social mixedness: The case of Javastraat, Indische Buurt, Amsterdam. *City & Community*, 19(4), 870–889. <https://doi.org/10.1111/cico.12451>
- Sbicca, J. (2018). Food, gentrification, and the changing city. *Boletín Ecos*, 43, 1–7. <https://mountainscholar.org/handle/10217/196640>
- Sbicca, J., Alkon, A., & Kato, Y. (2020, July 10). In changing urban neighborhoods, new food offerings can set the table for gentrification. *The Conversation*. <https://theconversation.com/in-changing-urban-neighborhoods-new-food-offerings-can-set-the-table-for-gentrification-131538>
- Schapendonk, J. (2018). Navigating the migration industry: Migrants moving through an African-European web of facilitation/control. *Journal of Ethnic and Migration Studies*, 44(4), 663–679. <https://doi.org/10.1080/1369183X.2017.1315522>
- Schrobenhauser, M., & Lütke, P. (2025). Food Gentrification in der Migrationsgesellschaft. Ambivalente Gentrifizierungsrealitäten migrantisch-bezogener Gastronomien in Münster. *Berichte. Geographie und Landeskunde*, 98(2/3), 131–159. <https://doi.org/10.25162/bgl-2025-0012>
- Sezer, C., & Maldonado, A. M. F. (2017). Cultural visibility and urban justice in immigrant neighbourhoods of Amsterdam. *Built Environment*, 43(2), 193–213. <https://doi.org/10.2148/benv.43.2.193>
- Skinner, K., Pratley, E., & Burnett, K. (2016). Eating in the city: A review of the literature on food insecurity and Indigenous people living in urban spaces. *Societies*, 6(2), Article 7. <https://doi.org/10.3390/soc6020007>
- Steigemann, A. (2020). “Multi-culti” vs. “another cell phone store”: Changing ethnic, social, and commercial diversities in Berlin-Neukölln. *Cosmopolitan Civil Societies: An Interdisciplinary Journal*, 12(1), 83–105. <https://doi.org/10.5130/ccs.v12.i1.6872>

- Stock, M. (2014). *Der Geschmack der Gentrifizierung: Arabische Imbisse in Berlin*. transcript Verlag.
- Triandafyllidou, A. (2019). The migration archipelago: Social navigation and migrant agency. *International Migration*, 57(1), 5–19. <https://doi.org/10.1111/imig.12512>
- Trundle, C., & Phillips, T. (2023). Defining focused ethnography: Disciplinary boundary-work and the imagined divisions between ‘focused’ and ‘traditional’ ethnography in health research—A critical review. *Social Science & Medicine*, 332, Article 116108. <https://doi.org/10.1016/j.socscimed.2023.116108>
- Urban Nature Atlas. (2021). *Green neighbourhood citizen initiative and community garden*. <https://una.city/nbs/amsterdam/green-neighbourhood-citizen-initiative-and-community-garden>
- van Eck, E., Hagemans, I., & Rath, J. (2020). The ambiguity of diversity: Management of ethnic and class transitions in a gentrifying local shopping street. *Urban Studies*, 57(16), 3299–3314. <https://doi.org/10.1177/004209801989700>
- van Malsen, I., & de Vreeze, N. (2020). *Noordwestkwadrant Indische Buurt: Climate, future proof plan*. ArcGIS StoryMaps. <https://storymaps.arcgis.com/stories/7fc7de20d6e64a819ce1e40c4aa246ba>
- Vigh, H. (2006). *Navigating terrains of war: Youth and soldiering in Guinea-Bissau*. Berghahn Books. <https://www.jstor.org/stable/10.2307/j.ctt1btbzkz>
- Vigh, H. (2009). Motion squared: A second look at the concept of social navigation. *Anthropological Theory*, 9(4), 419–438. <https://doi.org/10.1177/1463499609356044>
- Wacquant, L. (2012). A Janus-faced institution of ethnoracial closure: A sociological specification of the ghetto. In R. Hutchison & B. D. Haynes (Eds.), *The ghetto: Contemporary global issues and controversies* (1st ed., pp. 1–31). Routledge.
- Wall, S. S. (2015). Focused ethnography: A methodological adaptation for social research in emerging contexts. *Forum: Qualitative Social Research*, 16(1). <https://doi.org/10.17169/fqs-16.1.2182>
- Wenzel, F., Sonnenberg, M., & Lütke, P. (2024, August 25). *Strategic queer-friendliness in a post-migrant neighbourhood: Findings from the Indische Buurt in Amsterdam* [Paper presentation]. 35th International Geographical Congress, Dublin, Ireland.
- Zukin, S. (2008). Consuming authenticity: From outposts of difference to means of exclusion. *Cultural Studies*, 22(5), 724–748. <https://doi.org/10.1080/09502380802245985>
- Zukin, S. (2009). *Naked city: The death and life of authentic urban places* (1st ed.). Oxford University Press.

About the Authors



Maximilian Schrobenauser is a PhD candidate in the Department of Geography at the University of Münster. His dissertation, supported by the Hans Böckler Foundation, applies ethnographic and anthropological theories and methods to examine the dynamics of food gentrification.



Petra Lütke is a senior researcher in human geography at the Department of Geography at the University of Münster in Germany. She specializes in the intersection of urban geography, food geography, and spatial planning. Her recent research focuses on the implicit relationship between food practices and urban transformation in neoliberal contexts.

Strategic Spatial Opportunities for Local Food Distribution: Urban Accessibility of Community Gardens in Christchurch, Aotearoa New Zealand

Andreas Wesener, Shannon Davis, and Guanyu Chen

School of Landscape Architecture, Lincoln University, New Zealand

Correspondence: Andreas Wesener (andreas.wesener@lincoln.ac.nz)

Submitted: 31 October 2024 **Accepted:** 3 February 2025 **Published:** 14 May 2025

Issue: This article is part of the issue “Perspectives on Food in the Sustainable City” edited by Birgit Hoinle (University of Hohenheim), Alena Birnbaum (University of Kassel), and Petra Lütke (University of Münster), fully open access at <https://doi.org/10.17645/up.i395>

Abstract

This study explores strategic opportunities for improving access to and distribution of locally produced food. Food consumption in urban areas often depends on long and distant supply chains and corporate distribution points such as supermarkets. Poor integration of local urban food production is a source of food insecurity as much as an ecological, social, and infrastructural problem. It creates pressures on the supply and logistics of food distribution, challenging the resilience of the entire system, particularly in the context of sudden (e.g., earthquakes, floods, bushfires) and slow-onset disasters, such as climate change. This article explores how strategic spatial opportunities for community-oriented, urban food production sites could make cities more resilient from a food security and social accessibility perspective. With the help of a case study—urban community gardens in Christchurch, Aotearoa New Zealand—and geographic information system (GIS) analysis, the article proposes a method to examine spatial accessibility to urban community gardens and examines associated socio-demographic factors, in comparison to commercial food outlets (supermarkets). The results suggest that the applied method is useful in examining the spatial accessibility of gardens within their specific demographic context. They reveal that urban community gardens in Christchurch are mainly located in more deprived areas and that walkable access to gardens is provided to about one-fifth of the city's total population. The article discusses the results within the context of specific spatial and demographic urban characteristics, including low density, car dependency, and disaster susceptibility, and provides suggestions for further research and urban planning policy.

Keywords

15-minute city; community garden; food access; food distribution; food resilience; food security; urban agriculture

1. Introduction

Community gardens (CGs) have been broadly defined as community-managed, shared, green open spaces for mainly horticultural uses that may comprise allotment-style and collectively operated gardens providing a broad variety of social, economic, environmental, and cultural benefits (American Community Garden Association, 2024; Guitart et al., 2012; Zheng & Chou, 2023). The many benefits of CGs have been widely discussed, and it goes beyond the scope of this study to reiterate them in detail. They range from physical and mental health to economic, food security, agrobiodiversity, and social interaction benefits (American Community Garden Association, 2024; Raneng et al., 2023). Several authors have highlighted the role of urban CGs in the context of disasters and disaster resilience (Chan et al., 2015; Kato et al., 2014; Okvat & Zautra, 2014; Shimpō et al., 2019; Sims-Muhammad, 2012; Wesener, 2020). The National Research Council (2011, pp. 13–14) defines resilience as “the continued ability of a person, group, or system to adapt to stress—such as any sort of disturbance—so that it may continue to function, or quickly recover its ability to function, during and after stress.” CGs offer many resilience-related benefits, including the mitigation of food shortages following the disruption of supply chains, social and mental health services, post-trauma therapy, positive emotions, and the provision of safe spatial settings. Benefits are often created incrementally, e.g., through daily routines and social interactions that may help people prepare better for future crises and thus increase the overall resilience of (urban) systems (Wesener, 2020). Benefits can often be enjoyed by community gardeners and local communities alike (Anderson et al., 2019; Dubová & Macháč, 2019). The “spatial spread” of CG benefits beyond the immediate boundaries of a garden is also the focus of this study through investigating the spatial accessibility of CGs to neighbouring urban areas and associated communities.

Food consumption in urban areas depends often on long and distant supply chains and corporate distribution points such as supermarkets. Poor integration of urban food production with the built environment and associated problems with spatial accessibility are sources of food insecurity (Jensen & Orfila, 2021) as much as an ecological and a social problem (Oscilowicz et al., 2022). While urban CGs are often not able to produce enough food to supply even their immediate neighbouring communities, they provide spatial potential as alternative food distribution points. This study does not assess the production capacities of CGs, rather, we undertake a spatial analysis of urban CGs to investigate their potential as alternative urban food production and distribution locations. The study follows the hypothesis that urban CGs could provide accessible, community-oriented food production and distribution points based on local supply chains as part of a wider strategic vision that may include collaborations with peri-urban food producers. Creating an alternative food distribution network could make cities more resilient from a food security perspective, more specifically, moving towards the direction of “all people at all times have access to sufficient, safe, and nutritious food to maintain a healthy and active life” as defined by the World Health Organisation, as cited in Toi te ora (2023).

Access to food sources has been examined by past studies showing that access to healthy and affordable food, such as fresh fruits and vegetables, is influenced by residential distribution, including disparities between neighbourhoods based on race and income (Block & Kouba, 2006; Chen, 2017; Giang et al., 2008; Glanz et al., 2007; Hendrickson et al., 2006; Larson et al., 2009; Powell et al., 2007; Raja et al., 2008; Walker et al., 2010; Zenk et al., 2006). Many urban areas do not have reasonable access to food sources, limiting access to healthy food and food choice (Walker et al., 2010). Limited access to healthy food was found to correlate

with poorer health outcomes—in areas with the poorest access to food, residents experience greater health challenges with diet as a risk factor (Giang et al., 2008; Hendrickson et al., 2006; Schafft et al., 2009; Walker et al., 2010). For the residents who lack access to a personal vehicle for travelling to food sources beyond their immediate neighbourhood, living in a “food desert” can be even more detrimental (Lake & Townshend, 2006; Walker et al., 2010).

In addition to studies investigating spatial access to grocery stores, recent studies have also examined the spatial and social access to alternative food sources such as CGs. Limerick et al. (2023), for example, examined the percentage of the population who have 15-minute walking access to a CG in New York City, and how demographical characteristics were related to the geographical distribution of the gardens. The results show that over half of New Yorkers have 15-minute walking access to a CG. Neighbourhoods characterised by lower income, a smaller proportion of white residents and homeowners, and higher rates of educational attainment have even better access to a CG (Limerick et al., 2023).

While the literature on spatial and social access to food sources is extensive (Chen, 2017; Hendrickson et al., 2006; Larson et al., 2009; Li, 2022; Limerick et al., 2023; Powell et al., 2007; Raja et al., 2008; Schafft et al., 2009; Walker et al., 2010), much responds to the North American context, where the social and infrastructural context is significantly different from Aotearoa New Zealand—the context in which this study is conducted. Most Aotearoa New Zealand urban settlements have a much lower population density than major urban settlements in North America and, indeed, many other countries in the world (World Bank, 2020). In 2018, Christchurch, the study area of this research, had 369,006 residents at a density of 260 people/km² compared to New York City's 10,772 people/km² (Environmental Health Intelligence New Zealand, n.d.; Open Data Network, 2018). Aotearoa New Zealand also has one of the highest rates of car ownership in the world, with 818 light vehicles per 1,000 people in 2019 (Hipgrave, 2021). And among Aotearoa New Zealand cities, the Greater Christchurch area has the highest rate of car ownership nationally, with only 7% of households not owning a motor vehicle (Christchurch City Council, n.d.; Greater Christchurch Partnership, n.d.). In comparison, more than half of New York households do not own a car (United States Census Bureau, 2023b). However, in comparison to Christchurch, New York City has a highly developed public transportation system, with a high proportion of residents relying on it for their daily commute: 1.87 million New Yorkers use public transportation to commute to work, while only 1.06 million travel by car, either driving alone or in a carpool (United States Census Bureau, 2023a). While Aotearoa New Zealand's cities and towns were built around cars following World War II, car ownership in Aotearoa New Zealand is not universal (Pawson, 2014). In a society where cars and driving are the norm, individuals without access to a car may experience inequities, particularly when it comes to accessing essential living resources. From an environmental, social, and health perspective, active forms of urban transport in Christchurch—particularly walking and cycling—have been recommended and promoted (Christchurch City Council, 2012; Wesener et al., 2022).

In addition to promoting walking and cycling, the Christchurch City Council has also been promoting CGs as a part of the city development through its Food Resilience Policy with a vision “for Christchurch to become the ‘best edible garden city in the world’” (Christchurch City Council, 2016, p. 1). One of the goals of the Food Resilience Policy is to have “physical and economic access, by all people, at all times, to enough food to maintain an active and healthy life” (Christchurch City Council, 2014). According to Hanna and Wallace (2022), among the major cities in Aotearoa New Zealand, Christchurch offers the most supportive regulatory

framework for urban agriculture. The urban agriculture practices in Christchurch are facilitated by a collaborative food resilience network and food resilience policy, CG guidelines, an action plan, and tools such as a food foraging map and the Edible Canterbury web portal, demonstrating strong community and institutional leadership and advocacy for urban food cultivation (Hanna & Wallace, 2022). These policies and initiatives reflect Christchurch's reforming identity of "garden city"—a legacy rooted in its abundance of public parks and gardens, historically low-density living, early 20th-century ties to the Garden City movement, as well as the long traditions of the communal gardening history of Indigenous Māori before European settlement, which, while may not directly link to the "garden city" concept, resonate in its contemporary practices (Hanna & Wallace, 2022; Morris, 2006, 2020).

Like many countries in the world, Aotearoa New Zealand is largely urbanised, with 87% of the population living in urban areas (World Bank, 2023). The current zoning policies manage food production and urban housing in a dichotomic way, with habitable land largely classified as either rural or urban (Davis et al., 2023, 2024). This zoning approach deepens the urban–rural divide and thereby poses challenges to the management of food flows from rural commercial agriculture to urban areas (Davis et al., 2023). Aotearoa New Zealand cities, like most modern cities worldwide, rely almost solely on profit-driven commercial food distribution, which provides efficiency but raises concerns about resilience and equity (Chan et al., 2015; Kato et al., 2014; Kharel et al., 2024; Okvat & Zautra, 2014; Shimpo et al., 2019; Sims-Muhammad, 2012; Wesener, 2020).

The distinctive social, infrastructural, political, and historical context of Christchurch provides a unique lens for studying the "physical and economic access" to food sources, as outlined in the aforementioned Food Resilience Policy (Christchurch City Council, 2014). This study, therefore, takes a similar methodological approach as Limerick et al.'s (2023) study in New York City to examine how well sites of urban food access are connected to people in Christchurch and how the connection is influenced by demographic factors. By addressing these questions, we aim to gain a deeper understanding of the spatial distribution and resulting accessibility of urban CGs and their potential as alternative urban food distribution spaces. Additionally, we also seek to better understand how the existing spatial arrangement relates to various socio-demographic groups, with a particular focus on deprived communities. Based on geographic information system (GIS) analysis, the article proposes a method to examine spatial access to urban CGs and associated socio-demographic factors in comparison to commercial food outlets (supermarkets). Based on the 15-minute city concept (Moreno et al., 2021), the method has been developed with the help of a pilot case study. The choice of Christchurch as a case study is meaningful to acquire a better understanding of (walkable) food accessibility patterns in a low-density, car-dependent city.

2. Methods

Christchurch is the largest urban settlement in the South Island of Aotearoa New Zealand. It is home to a population of approximately 396,200 (Christchurch City Council, n.d.). For the purpose of this study, the boundary of the case study has been defined by Stats NZ's definition of the major urban area of Christchurch (Urban Accessibility Indicator), as shown in Figure 1.

The first step of this study involved mapping urban CGs and major commercial food outlets—supermarkets. A list of CGs in Christchurch was obtained through the Canterbury Community Gardens Association, a regional support network for CGs. Street addresses of gardens were verified via satellite maps and mapped in ArcGIS

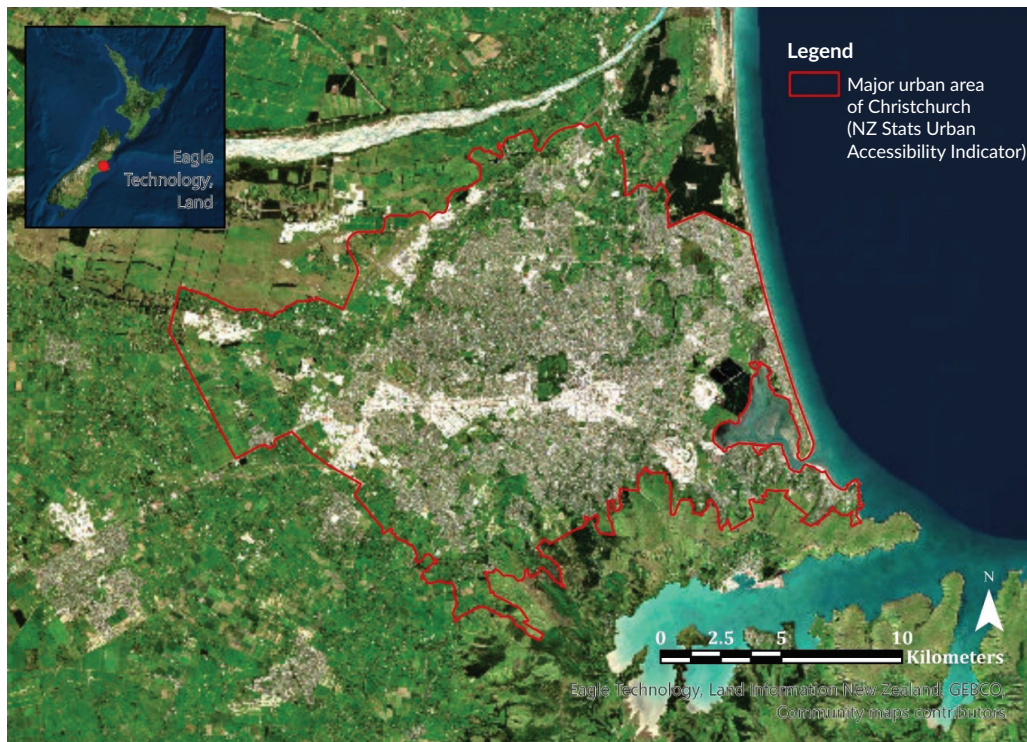


Figure 1. The urban boundary of Christchurch, defined by Stats NZ's Urban Access Indicator. Source: Adapted from Stats NZ Geographic Data Service (2020) and Land Information New Zealand (2024), licensed under CC Attribution 4.0 International.

Pro using the “Geocode addresses” tool. Thirty-four CGs were included in the analysis. In order to determine how well these gardens can serve as food sources and potential food distribution points, we mapped the catchment area of their 15-minute walking access. The “Network analysis” tool was employed to map the “service areas” of the “facilities”—the CGs. The 15-minute walking access is defined as 800 meters on the network, as an accepted standard (Limerick et al., 2023).

We overlaid the latest Stats NZ census data onto the service areas to link them with population and demographic information. The dataset was based on Statistical Area 1 (SA1) units—the finest-grained census zoning of the New Zealand census output geography. SA1s normally encompass populations of 100–200 residents, with a maximum of approximately 500 residents (Stats NZ, 2021). This fine-grained zoning provides more detailed information about population characteristics than at the mesh block level. In total, there were 2,290 tracts within the urban boundary of Christchurch City at the New Zealand census SA1 level. We estimated the number of residents who were covered by 15-minute service areas in each SA1 tract according to the percentage of areas with the service area. The “Tabulate intersection” tool was employed to determine the percentage of each SA1 tract covered by the service area. The resulting number of residents who have or do not have 15-minute access to a CG at the SA1 level was then summed to determine the accessibility status at the city level. The percentage of the population serviced by 15-minute supermarket access was determined following a similar procedure as for CGs. As all the large supermarkets in Christchurch are owned by two corporations and are running under four brands, they can be easily identified using Google Maps. In total, 35 supermarkets were included in our analysis.

In order to explore the connections between food accessibility and demographics, we tested the correlations between the accessibility to the two types of food sources (i.e., CG and supermarket) and a range of relevant demographic variables of the SA1 tracts, including population density, the percentage of European descendants, the percentage of the population with tertiary education degrees (bachelor's degree and above), the percentage of New Zealand-born and overseas-born residents, the percentage of unemployed residents, and median personal income. These demographic characteristics have been considered relevant to CGs in previous research (Hawes et al., 2022; Limerick et al., 2023). The Euclidean distance between the centroids of each SA1 tract and their nearest gardens and supermarkets was calculated using the "Near" tool in ArcGIS Pro to indicate the typical accessibility of the residents in each tract to these facilities.

The percentages of the SA1 population for categorical variables such as ethnic groups, unemployment, and education level were calculated using the census data. Some of the census categories were grouped to create a single variable of correlation testing. For example, the categories for "bachelor's degree," "post-graduate and honours degree," "master's degree," and "doctorate degree" were grouped into "bachelor's degree and above." The population density was calculated by dividing the population in each tract by the total area of each SA1 tract.

We tested all the variables for the assumptions of Pearson's correlation (Table 1). While the scores of most of the variables were approximately normally distributed, as assessed by visual inspection of Normal Q-Q Plots, the distribution of the scores of distances to the nearest supermarket, distance to the nearest CG, population density, the percentage of unemployed residents, and the percentage of overseas-born residents were found positively skewed. To normalise these skewed data, a square root transformation was applied to each of these variables. The transformed variables were then retested for their normality and found to meet the normality assumption. Also, all demographic variables exhibited a monotonic linear relationship to the accessibility variables and there were no significant outliers. Meeting all the assumptions, Pearson's correlation tests were run to assess the relationship between the proximity to CGs/supermarkets and the demographical characteristics of each SA1 tract.

3. Results

About 20% of Christchurch's population have 15-minute walkable access to a CG, while approximately 22% have walkable access to a supermarket. The walkable service areas of both CGs and supermarkets together serve about 35% of the overall population. However, only about 7.7% of Christchurch's population have access to both CGs and supermarkets within a 15-minute walking distance. The spatial distribution of CGs and supermarkets are shown in Figures 2 and 3 respectively. While the percentages of the population served by their 15-minute catchments are about the same, their spatial distribution patterns are different. While the supermarkets are spread around the city relatively evenly, the CGs exhibit a more clustered spatial pattern (as shown in Figures 2 and 3). Figures 2 and 3 also show that densely populated areas are more likely to fall within the 15-minute catchment zones of CGs, whereas the spatial distribution of supermarkets appears to be less relevant to population density. Also, most gardens are situated in areas with poorer socioeconomic status and higher levels of deprivation, as shown in Figure 4. This pattern is echoed by statistical correlations. The level of deprivation is defined by the NZDep 2018 index of deprivation, an index developed to measure socioeconomic deprivation in Aotearoa New Zealand (Atkinson et al., 2019). A range of sociodemographic factors were taken into account to determine the deprivation score, including lack of

access to the internet, receiving a means-tested benefit, unemployment, lack of educational qualification, etc. (Atkinson et al., 2019).

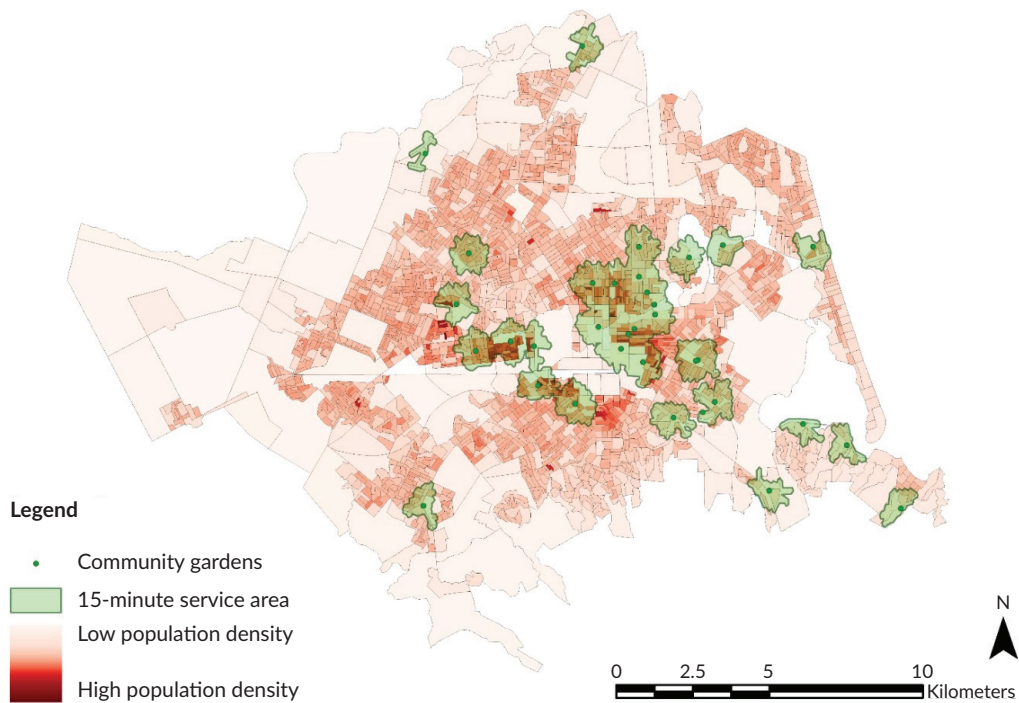


Figure 2. CGs and their 15-minute walk service areas. Source: Stats NZ (2020), licensed under CC Attribution 4.0 International.

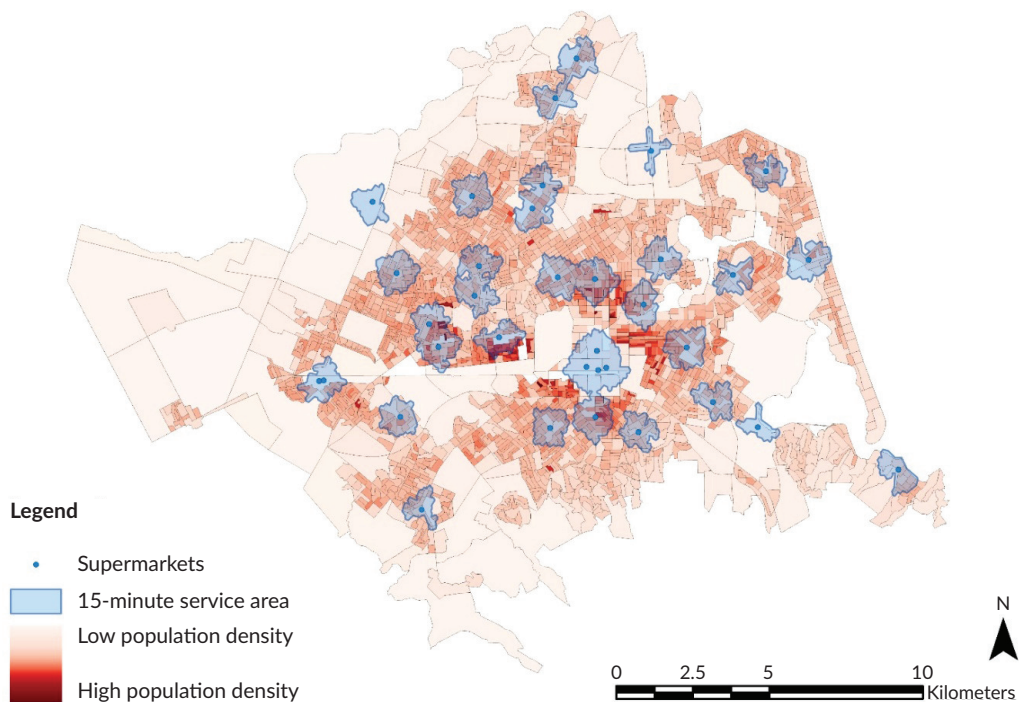


Figure 3. Supermarkets and their 15-minute walk service areas. Source: Stats NZ (2020), licensed under CC Attribution 4.0 International.

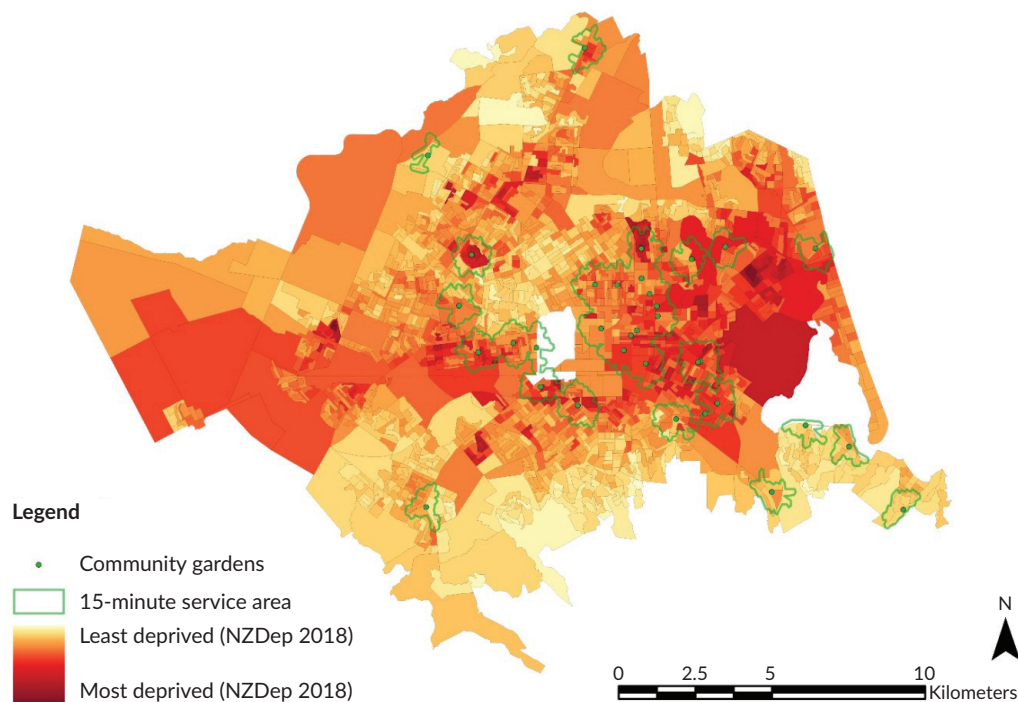


Figure 4. Deprivation score and the service areas of CGs. Source: Stats NZ (2020) and University of Otago (n.d.), licensed under CC Attribution 4.0 International.

Figure 5 illustrates the spatial distribution of the CGs and supermarkets, as well as their 15-minute walking service areas. While the overlapped service areas (CG and supermarket) cover 7.72% of the Christchurch population, the population covered only by the supermarket catchment and only by CGs account for 14.39% and 12.91%, respectively, of the total population.

As for the statistical correlations, the results of the Person's correlation tests reveal that there were statistically significant, small correlations between proximity to CGs and all the factors outlined in Table 1. It is worth noting that some of the correlations involve square root-transformed variables, including the percentage of unemployed, the percentage of residents born overseas, and the population density.

Communities with a lower percentage of European descendants and New Zealand-born residents, as much as a higher percentage of tertiary education (bachelor's degree and above), unemployment, overseas-born residents, lower median age, lower median personal income, and higher population density can be expected to have better access to CGs.

The results for supermarkets reveal a pattern similar to the correlations between demographical variables and access to CGs. All variables, except for education level, show statistically significant correlations with supermarket access. These correlations exhibit the same correlation directions and similar correlation strength (correlation coefficient between .1 and .4) to those observed for CG access. The correlation between proximity to supermarkets and the percentage of residents who have a bachelor's degree or above is negligible and not statistically significant.

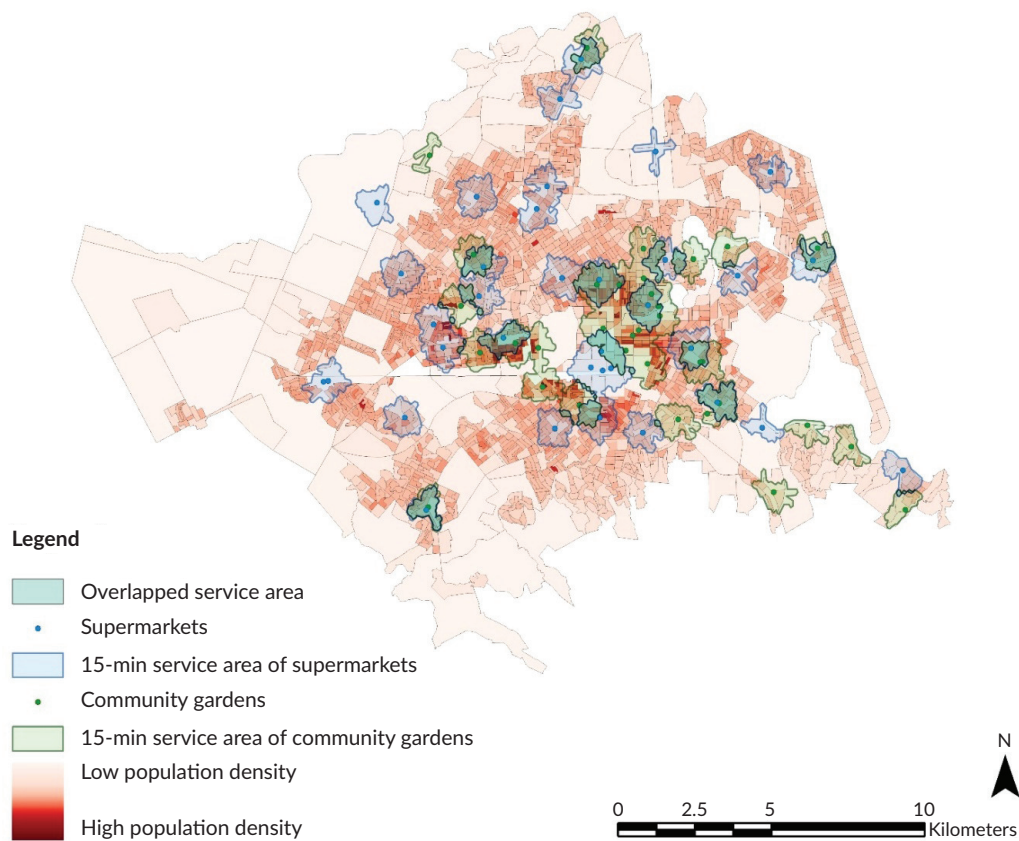


Figure 5. Spatial relationships between the service areas of CGs and supermarkets. Source: Stats NZ (2020), licensed under CC Attribution 4.0 International.

This means that the communities with a lower percentage of European descendants, New Zealand-born residents, as well as a higher percentage of unemployment, overseas-born residents, lower median personal income, and higher population density can be expected to have better access to supermarkets.

4. Discussion

The study explored the question if urban CGs are accessible (walkable) distribution points for local food production and potentially peri-urban production. The article developed a GIS-based research method to examine and compare spatial access to urban CGs and supermarkets and analysed associated socio-demographic factors. The selected case study (Christchurch) is an example of a low-density, car-dependent city. The applied method provided detailed information on the spatial accessibility of urban CG sites in Christchurch, as well as demographic details of the population catchment of 15-minute walking proximity.

Only about 35% of Christchurch's urban population have walkable access to supermarkets or CGs. This relates to the city's low population density and high car dependency. However, spatial distribution patterns for CGs and supermarkets vary across Christchurch. Our spatial analyses revealed that the majority of CGs are located in areas with higher levels of deprivation. CGs have often been observed in lower-income neighbourhoods (Butterfield, 2020; Limerick et al., 2023; Opitz et al., 2016; Voicu & Been, 2008). However,

Table 1. Pearson correlations between distance variables and demographical variables.

		Distance to supermarket (sqrt)	Distance to community garden (sqrt)
% European descendant	Pearson correlation	.211**	.112**
	Sig. (2-tailed)	< .001	< .001
	N	2,289	2,289
% Bachelor's degree and above	Pearson correlation	-.037	-.169**
	Sig. (2-tailed)	.075	< .001
	N	2,282	2,282
% Unemployed (sqrt)	Pearson correlation	-.126**	-.117**
	Sig. (2-tailed)	< .001	< .001
	N	2,285	2,285
% New Zealand born	Pearson correlation	.214**	.212**
	Sig. (2-tailed)	< .001	< .001
	N	2,289	2,289
% Overseas born (sqrt)	Pearson correlation	-.201**	-.190**
	Sig. (2-tailed)	< .001	< .001
	N	2,289	2,289
Median personal income	Pearson correlation	.204**	.135**
	Sig. (2-tailed)	< .001	< .001
	N	2,289	2,289
Population density (sqrt)	Pearson correlation	-.262**	-.221**
	Sig. (2-tailed)	< .001	< .001
	N	2,289	2,289

Notes: * $p < .05$, ** $p < .01$ (2-tailed).

Hawes et al. (2022), differently, found that CGs in Detroit tend to cluster in affluent neighbourhoods. This different pattern may relate to the geographical context such as low-density living and high vacancy rates of shrinking post-industrial cities. In the case of Christchurch, we found lower median personal income to be correlated with accessibility to CGs. The reasons may be twofold: Firstly, CGs, unlike other channels for acquiring food (e.g., supermarkets), are often established and managed following a bottom-up approach (Fox-Kämper et al., 2018). They serve as a means of self-sufficiency in response to urban disinvestment, economic challenges, or limited food access (Limerick et al., 2023; Reynolds & Cohen, 2016; Taylor & Lovell, 2012). CGs often function as an economic opportunity for vulnerable communities to acquire cheap and healthy food. Secondly, many socioeconomically deprived areas have more vacant land available for the development of urban agriculture, which may contribute to the observed correlation.

However, our statistical analysis revealed also correlations between deprivation indicators and supermarket access. In Christchurch, communities with a higher percentage of unemployed residents and lower median personal income have better access to supermarkets than less deprived communities. Thus, our supermarket-related analysis exhibits a different pattern from what was observed in previous studies, particularly in the North American context, and associated discussions around food deserts (e.g., Walker et al., 2010). This seems like an oddity—supermarkets are usually driven by higher profit margins, which can be achieved more easily in wealthy communities. Possible explanations include the low-density, car-dependent characteristics of Christchurch. Both supermarkets and CGs in Christchurch are located in areas with higher population densities. However, wealthy areas in Christchurch tend to be located in

low-density areas with predominantly residential land uses. In these areas, access to amenities is highly car-dependent; most residents do their shopping by car. In a city where an overwhelming majority of the population travels by car (Christchurch City Council, 2023), people base their locational choices more often on factors such as land prices and school zones. Outside rush-hour traffic, many amenities in Christchurch can be reached within a 5 to 10-minute car ride; driving is easy, and parking is often free.

CGs in Christchurch tend to be located in areas of a higher density, less affluent population, and higher education degrees. Education attainment is another key but contradictory factor that often exhibits a correlation to urban food accessibility. While higher education attainment is often associated with higher median income, there are also correlations between lower-income, higher-education neighbourhoods and CG accessibility (Butterfield, 2020; Li, 2022; Limerick et al., 2023). Two studies conducted in New York observed that the communities of low income and the ones of higher education attainment tend to have better access to CGs (Butterfield, 2020; Limerick et al., 2023). However, the interpretation of this interesting observation varies. Li (2022) argued that while both groups exhibit the same food acquisition pattern, the reasons behind the pattern are likely different. For example, Butterfield (2020) argued that in low-income communities, CGs are often developed as a means of resisting disinvestment and improving access to healthy food. In contrast, communities of higher education attainment are more likely to develop CGs for addressing local sustainability concerns. Butterfield (2020) further suggested that the presence of CGs nearby may indicate early signs of gentrification in these neighbourhoods, a trend also observed in Denver, Colorado (Sbicca, 2019). Neighbourhoods that undergo gentrification show often—at least to a certain point—low-income and high-education patterns. While our study observed similar patterns, we did not analyse gentrification and related demographics for Christchurch. Further research would be needed to better understand the mechanisms of gentrification and how related factors contribute to the formation of CGs.

Ethnic groups are another key demographical factor often considered relevant to the accessibility of CGs. Evidence shows that the CGs in Detroit and Portland tend to be located closer to white populations (Hawes et al., 2022), while studies conducted in Philadelphia (Meenar & Hoover, 2012), Toledo (Burdine & Taylor, 2018), and New York (Butterfield, 2020; Limerick et al., 2023) found that CGs tend to be located in communities with a higher proportion of non-white population. Our results reiterate the latter and find that the communities with a higher percentage of non-European descendants tend to live closer to urban CGs.

In 2010 and 2011, the Canterbury region experienced two major earthquakes and a series of devastating aftershocks. CGs provided a range of benefits including becoming places for social exchange, sources of food when supply chains were disrupted, and post-disaster learning spaces (Shimpo et al., 2019; Wesener, 2020). Following the earthquakes, various bottom-up garden projects sprung up (e.g., Montgomery et al., 2016; Wesener, 2015), and new policy frameworks such as the Food Resilience Policy (Christchurch City Council, 2014) and related network organisations such as the Food Resilience Network were created. While the Canterbury earthquakes accelerated community action around urban gardening, Christchurch remains prone to slow-onset disasters related to climate change including floods, extreme weather events, and sea-level rise. Such events do disproportionately affect urban populations that suffer already from socioeconomic deprivation. Vulnerable communities would benefit from walkable access to affordable food access points. For about 13% of Christchurch's population, CGs are the only accessible food distribution point within a 15-minute walk. This strengthens the argument that CGs could potentially become more

relevant in providing alternative facilities for urban food distribution. Promoting local systems and food distribution infrastructure that are not as prone to supply chain interruptions and related price hikes as, for example, supermarkets, would make local food supplies in Christchurch less susceptible to disasters and (economic) crises. Local, walkable food distribution points would remain more accessible in the case of major disasters and global crises. In addition, urban gardens help mitigate climate change effects, e.g., by reducing and sequestering carbon emissions (Edmondson et al., 2020; Okvat & Zautra, 2011; Richter et al., 2020), reducing urban heat effects (Rost et al., 2020), or supporting stormwater retention and filtration (Pauleit & Duhme, 2000). CGs could play a pivotal role in increasing disaster resilience and mitigating the effects of climate change if their role as accessible distribution points for locally grown food were enhanced and strategically promoted. Our analysis shows that, currently, only a minority of Christchurch's population has walkable access to urban CGs.

It would be advisable to not only support new gardens but also improve their potential benefits in terms of accessibility and offer. This has potential implications for urban planning and design. For example, establishing and promoting collaboration between urban CGs and peri-urban farms could increase the availability of locally grown food distributed through CGs, particularly for vulnerable communities. In Aotearoa New Zealand, peri-urban farms (food production landscapes that sit within the urban hinterland), have greater production capacities, but due to their peripheral location and disconnection with local distribution opportunities they often export their produce instead of selling it locally (Davis et al., 2023). While production capacity and urban–peri-urban collaboration are important topics for future research, this study focussed on the spatial potential of CGs to increase urban food resilience. Compared to supermarkets, CGs in Christchurch are spatially as well as socially well-connected to act as local food production distribution centres, even if walkability could be further improved to serve larger parts of the community.

5. Conclusion

The method developed within this research allowed for the spatial exploration of food access sites within our case study site of Christchurch, and how their spatial location correlated to demographic and social conditions. It is envisioned that this method could be applied to other cities and settlements within Aotearoa New Zealand, and internationally, to better understand the distribution and catchment population of food access sites.

Returning to the topic of urban food security, our research has shown that through analysing the spatial configuration of food access sites, urban authorities and decision-makers will be better equipped to respond to issues such as addressing urban food resilience through both urban policy and design. Like many countries globally, the majority of Aotearoa New Zealand's population lives in urban areas today. Over the past few decades, the urban–rural dichotomy has been exacerbated by zoning policies segregating agricultural-oriented and urban living-oriented land uses. This creates challenges in managing and organising food inflows from rural areas—where large-scale, commercially driven agricultural production is possible—to urban areas—where urban agriculture is emerging but will remain limited in scale of production and quantity of produce. Food security in Aotearoa New Zealand, in essence, is not driven by a lack of food production, but rather a lack of access (defined by low disposable household income and material deprivation). A common solution in most major cities is to rely on profit-driven commercial facilities for food distribution. While these market-driven approaches facilitate efficient distribution services, they also present challenges related to resilience and equity. Our study examined the spatial opportunity of using CGs as alternative

distribution points for food produced in nearby peri-urban or rural zones, where large-scale production aligns with current legislative frameworks. The findings highlight that CGs are not only physically and socially well-connected to a considerable proportion of urban residents but are particularly accessible to vulnerable communities. This underscores the potential of CGs to contribute to addressing food security and equity challenges. By integrating food infrastructure into a walkable urban form, cities and settlements would have the opportunity to create a more food-secure urban population. Urban planning and design policies need to support the development of new urban gardens in strategic locations to establish accessible, walkable food distribution points. Including urban gardening as a strategic urban intervention into a more holistic urban resilience policy framework could provide new opportunities for public funding and private investment benefitting both gardens and local communities.

Limited by the availability of current and accurate data relating to the number and location of CGs, this project sought to develop a method for understanding the spatial relationship of CGs and supermarkets, and their social catchments. Results indicated that the method provides relevant spatial analysis, that when inputted with up-to-date data, will have value in informing future urban planning. Although part of the required dataset has limited temporal relevance in our case, this approach for analysing spatial catchments and accessibility of urban food distribution infrastructure remains generalisable and applicable to similar contexts where spatial data on food distribution points are available. Moreover, this approach enables the investigation of correlations between the spatial patterns of food networks and geographical demographics in contexts where census data are accessible and geospatially archived. Further research focused on applying this method to other urban settlements or other types of food distribution facilities, such as farmers' markets, for example, will allow for a greater understanding of the spatial impact that location and walkability of food distribution sites have on urban food security and resilience. Surveying urban populations around their food access habits and strategies would allow for the testing and ground-truthing of our hypothesis that spatial proximity to places of food distribution positively impacts food security. While we interpreted the correlations between the spatial distribution patterns of food sources and the relevant demographic factors through a review of existing literature, we acknowledge the need for a deeper exploration of the mechanisms by which these demographic factors influence the distribution patterns, particularly in the case of CGs. A more comprehensive understanding could be achieved by conducting interviews with stakeholders of the CGs and supermarkets to gain firsthand and context-specific insights into the correlations. Such interviews could also offer valuable perspectives on the feasibility of utilising CGs as distribution points for food produced in urban peripheries, as viewed by the stakeholders themselves. Additionally, a comparative study examining the differences and commonalities between supermarkets (as an example of commercial food distribution places) and CGs (as an example of community not-for-profit distribution places) would also be instrumental in better understanding the range of opportunities and limitations of different urban food distribution places, in terms of their contribution to urban food security. Further research into the social "ground-up" and policy "top-down" contexts of CGs will further expand our understanding of the determinants impacting spatial distribution. Finally, future research into the potential mutual benefit of peri-urban growers distributing their produce through a local network of urban CGs will further allow for a better understanding of the opportunities of local food networks to positively impact urban food security and resilience.

Funding

This research was funded by the Lincoln University, Faculty of Environment, Society and Design, 2024 Harvest Fund.

Conflict of Interests

The authors declare no conflict of interests.

References

- American Community Garden Association. (2024). *What is a community garden?* <https://web.archive.org/web/20071204082111/http://www.communitygarden.org/learn>
- Anderson, E. C., Egerer, M. H., Fouch, N., Clarke, M., & Davidson, M. J. (2019). Comparing community garden typologies of Baltimore, Chicago, and New York City (USA) to understand potential implications for socio-ecological services. *Urban Ecosystems*, 22(4), 671–681. <https://doi.org/10.1007/s11252-019-00855-9>
- Atkinson, J., Salmond, C., & Crampton, P. (2019). *NZDep2018 index of deprivation, interim research report*. University of Otago. https://www.otago.ac.nz/__data/assets/pdf_file/0025/327481/nzdep2018-index-of-deprivation-research-report-interim-dec-2019-730394.pdf
- Block, D., & Kouba, J. (2006). A comparison of the availability and affordability of a market basket in two communities in the Chicago area. *Public Health Nutrition*, 9(7), 837–845. <https://doi.org/10.1017/PHN2005924>
- Burdine, J. D., & Taylor, D. E. (2018). Neighbourhood characteristics and urban gardens in the Toledo metropolitan area: Staffing and voluntarism, food production, infrastructure, and sustainability practices. *Local Environment*, 23(2), 198–219. <https://doi.org/10.1080/13549839.2017.1397614>
- Butterfield, K. L. (2020). Neighborhood composition and community garden locations: The effect of ethnicity, income, and education. *Sociological Perspectives*, 63(5), 738–763. <https://doi.org/10.1177/0731121420908902>
- Chan, J., DuBois, B., & Tidball, K. G. (2015). Refuges of local resilience: Community gardens in post-Sandy New York City. *Urban Forestry & Urban Greening*, 14(3), 625–635. <https://doi.org/10.1016/j.ufug.2015.06.005>
- Chen, X. (2017). Take the edge off: A hybrid geographic food access measure. *Applied Geography*, 87, 149–159. <https://doi.org/10.1016/j.apgeog.2017.07.013>
- Christchurch City Council. (n.d.). *Facts, stats and figures*. <https://ccc.govt.nz/culture-and-community/statistics-and-facts/facts-stats-and-figures>
- Christchurch City Council. (2012). *Christchurch Transport Strategic Plan 2012–2042*. <https://ccc.govt.nz/assets/Documents/The-Council/Plans-Strategies-Policies-Bylaws/Strategies/ChristchurchStrategyTransportPlan2012.pdf>
- Christchurch City Council. (2014). *Food resilience policy*. <https://ccc.govt.nz/the-council/plans-strategies-policies-and-bylaws/policies/strengthening-communities-policies/food-resilience-policy>
- Christchurch City Council. (2016). *Christchurch City Council community gardens guidelines*. <https://www.ccc.govt.nz/assets/Documents/Environment/Sustainability/CouncilCommunityGardensGuidelines2016.pdf>
- Christchurch City Council. (2023). *Transport survey results*. <https://ccc.govt.nz/the-council/how-the-council-works/reporting-and-monitoring/life-in-christchurch/transport>
- Davis, S., Chen, G., & Darvill, N. (2023). Housing and food production: Resident and grower perceptions of peri-urban food-production landscapes. *Land*, 12(12), Article 2091. <https://doi.org/10.3390/land12122091>

- Davis, S., Chen, G., Darvill, N., & Robinson, M. (2024). Peri-urban landscapes and the potential of integrated foodscapes to support healthy cities: An Aotearoa New Zealand case study. *Cities & Health*, 8(5), 899–917. <https://doi.org/10.1080/23748834.2024.2348284>
- Dubová, L., & Macháč, J. (2019). Improving the quality of life in cities using community gardens: From benefits for members to benefits for all local residents. *GeoScape*, 13(1), 68–78. <https://doi.org/10.2478/geosc-2019-0005>
- Edmondson, J. L., Childs, D. Z., Dobson, M. C., Gaston, K. J., Warren, P. H., & Leake, J. R. (2020). Feeding a city—Leicester as a case study of the importance of allotments for horticultural production in the UK. *Science of the Total Environment*, 705, Article 135930. <https://doi.org/10.1016/j.scitotenv.2019.135930>
- Environmental Health Intelligence New Zealand. (n.d.). *Population size and change*. <https://www.ehinz.ac.nz/indicators/population-vulnerability/population-size-and-change>
- Fox-Kämper, R., Wesener, A., Munderlein, D., Sondermann, M., McWilliam, W., & Kirk, N. (2018). Urban community gardens: An evaluation of governance approaches and related enablers and barriers at different development stages. *Landscape and Urban Planning*, 170(Suppl. C), 59–68. <https://doi.org/10.1016/j.landurbplan.2017.06.023>
- Giang, T., Karpyn, A., Laurison, H. B., Hillier, A., & Perry, R. D. (2008). Closing the grocery gap in underserved communities: The creation of the Pennsylvania Fresh Food Financing Initiative. *Journal of Public Health Management and Practice*, 14(3), 272–279. <https://doi.org/10.1097/01.PHH.0000316486.57512.bf>
- Glanz, K., Sallis, J. F., Saelens, B. E., & Frank, L. D. (2007). Nutrition Environment Measures Survey in Stores (NEMS-S): Development and evaluation. *American Journal of Preventive Medicine*, 32(4), 282–289. <https://doi.org/10.1016/j.amepre.2006.12.019>
- Greater Christchurch Partnership. (n.d.). *Trends and issues—Transport*. <https://www.greaterchristchurch.org.nz/our-work/background/background-2007/trends/transport#:~:text=The%20Greater%20Christchurch%20area%20has,we%20want%20for%20our%20future>
- Guitart, D., Pickering, C., & Byrne, J. (2012). Past results and future directions in urban community gardens research. *Urban Forestry & Urban Greening*, 11(4), 364–373. <https://doi.org/10.1016/j.ufug.2012.06.007>
- Hanna, C., & Wallace, P. (2022). Planning the urban foodscape: Policy and regulation of urban agriculture in Aotearoa New Zealand. *Kōtuitui: New Zealand Journal of Social Sciences Online*, 17(3), 313–335. <https://doi.org/10.1080/1177083X.2021.1996403>
- Hawes, J. K., Gounaridis, D., & Newell, J. P. (2022). Does urban agriculture lead to gentrification? *Landscape and Urban Planning*, 225, Article 104447. <https://doi.org/10.1016/j.landurbplan.2022.104447>
- Hendrickson, D., Smith, C., & Eikenberry, N. (2006). Fruit and vegetable access in four low-income food deserts communities in Minnesota. *Agriculture and Human Values*, 23(3), 371–383. <https://doi.org/10.1007/s10460-006-9002-8>
- Hipgrave, P. (2021). *Number of motor vehicles*. Environmental Health Intelligence New Zealand.
- Jensen, P. D., & Orfila, C. (2021). Mapping the production–consumption gap of an urban food system: An empirical case study of food security and resilience. *Food Security*, 13(3), 551–570. <https://doi.org/10.1007/s12571-021-01142-2>
- Kato, Y., Passidomo, C., & Harvey, D. (2014). Political gardening in a post-disaster city: Lessons from New Orleans. *Urban Studies*, 51(9), 1833–1849. <https://doi.org/10.1177/0042098013504143>
- Kharel, S., Sharifiasl, S., & Pan, Q. (2024). Examining food access equity by integrating grocery store pricing into spatial accessibility measures. *Transportation Research Record*. Advance online publication. <https://doi.org/10.1177/03611981241254382>
- Lake, A., & Townshend, T. (2006). Obesogenic environments: Exploring the built and food environments.

- Journal of the Royal Society for the Promotion of Health*, 126(6), 262–267. <https://doi.org/10.1177/1466424006070487>
- Land Information New Zealand. (2024). *New Zealand 10m satellite imagery (2022-2023)*. <https://data.linz.govt.nz/layer/116323-new-zealand-10m-satellite-imagery-2022-2023>
- Larson, N. I., Story, M. T., & Nelson, M. C. (2009). Neighborhood environments: Disparities in access to healthy foods in the U.S. *American Journal of Preventive Medicine*, 36(1), 74–81. <https://doi.org/10.1016/j.amepre.2008.09.025>
- Li, T. (2022). *Modeling the efficacy of the 15-minute city using large-scale mobility data from the perspective of accessibility and user choice: A case study on the urban food environment* [Unpublished master's thesis]. Massachusetts Institute of Technology.
- Limerick, S., Hawes, J. K., Gounaridis, D., Cohen, N., & Newell, J. P. (2023). Community gardens and the 15-minute city: Scenario analysis of garden access in New York City. *Urban Forestry & Urban Greening*, 89, Article 128107. <https://doi.org/10.1016/j.ufug.2023.128107>
- Meenar, M. R., & Hoover, B. M. (2012). Community food security via urban agriculture: Understanding people, place, economy, and accessibility from a food justice perspective. *Journal of Agriculture, Food Systems, and Community Development*, 3(1), 143–160. <https://doi.org/10.5304/jafscd.2012.031.013>
- Montgomery, R., Wesener, A., & Davies, F. (2016). Bottom-up governance after a natural disaster: A temporary post-earthquake community garden in central Christchurch, New Zealand. *Nordic Journal of Architectural Research*, 28(3), 143–173. <http://arkitekturforskning.net/na/article/view/858>
- Moreno, C., Allam, Z., Chabaud, D., Gall, C., & Pratlong, F. (2021). Introducing the “15-minute city”: Sustainability, resilience and place identity in future post-pandemic cities. *Smart Cities*, 4(1), 93–111. <https://doi.org/10.3390/smartcities4010006>
- Morris, M. (2006). *A history of Christchurch home gardening from colonisation to the Queen's visit: Gardening culture in a particular society and environment* [Unpublished doctoral dissertation]. University of Canterbury. <https://doi.org/10.26021/4409>
- Morris, M. (2020). *Common ground: Garden histories of Aotearoa*. Otago University Press.
- National Research Council. (2011). *Building community disaster resilience through private–public collaboration*. The National Academies Press. <https://doi.org/10.17226/13028>
- Okvat, H. A., & Zautra, A. J. (2011). Community gardening: A parsimonious path to individual, community, and environmental resilience. *American Journal of Community Psychology*, 47(3/4), 374–387. <https://doi.org/10.1007/s10464-010-9404-z>
- Okvat, H. A., & Zautra, A. J. (2014). Sowing seeds of resilience: Community gardening in a post-disaster context. In K. G. Tidball & M. E. Krasny (Eds.), *Greening in the red zone* (pp. 73–90). Springer.
- Open Data Network. (2018). *Population density of New York* [Data set]. https://www.opendatanetwork.com/entity/1600000US3651000/New_York_NY/geographic.population.density?year=2018
- Opitz, I., Berges, R., Piore, A., & Krikser, T. (2016). Contributing to food security in urban areas: Differences between urban agriculture and peri-urban agriculture in the Global North. *Agriculture and Human Values*, 33(2), 341–358. <https://doi.org/10.1007/s10460-015-9610-2>
- Oscilowicz, E., Anguelovski, I., Triguero-Mas, M., García-Lamarca, M., Baró, F., & Cole, H. V. S. (2022). Green justice through policy and practice: A call for further research into tools that foster healthy green cities for all. *Cities & Health*, 6(5), 878–893. <https://doi.org/10.1080/23748834.2022.2072057>
- Pauleit, S., & Duhme, F. (2000). Assessing the environmental performance of land cover types for urban planning. *Landscape and Urban Planning*, 52(1), 1–20. [https://doi.org/10.1016/S0169-2046\(00\)00109-2](https://doi.org/10.1016/S0169-2046(00)00109-2)
- Pawson, E. (2014). *Cars and the motor industry*. Te Ara: The Encyclopedia of New Zealand. <http://www.teara.govt.nz/en/cars-and-the-motor-industry/print>

- Powell, L. M., Slater, S., Mirtcheva, D., Bao, Y., & Chaloupka, F. J. (2007). Food store availability and neighborhood characteristics in the United States. *Preventive Medicine*, 44(3), 189–195. <https://doi.org/10.1016/j.ypmed.2006.08.008>
- Raja, S., Ma, C., & Yadav, P. (2008). Beyond food deserts: Measuring and mapping racial disparities in neighborhood food environments. *Journal of Planning Education and Research*, 27(4), 469–482. <https://doi.org/10.1177/0739456X08317461>
- Raneng, J., Howes, M., & Pickering, C. M. (2023). Current and future directions in research on community gardens. *Urban Forestry & Urban Greening*, 79, Article 127814. <https://doi.org/10.1016/j.ufug.2022.127814>
- Reynolds, K., & Cohen, N. (2016). *Beyond the kale: Urban agriculture and social justice activism in New York City*. University of Georgia Press.
- Richter, S., Haase, D., Thestorff, K., & Makki, M. (2020). Carbon pools of Berlin, Germany: Organic carbon in soils and aboveground in trees. *Urban Forestry & Urban Greening*, 54, Article 126777. <https://doi.org/10.1016/j.ufug.2020.126777>
- Rost, A. T., Liste, V., Seidel, C., Matscherroth, L., Otto, M., Meier, F., & Fenner, D. (2020). How cool are allotment gardens? A case study of nocturnal air temperature differences in Berlin, Germany. *Atmosphere*, 11(5), Article 500. <https://doi.org/10.3390/atmos11050500>
- Sbicca, J. (2019). Urban agriculture, revalorization, and green gentrification in Denver, Colorado. In T. Bartley (Ed.), *The politics of land* (pp. 149–170). Emerald Publishing Limited. <https://doi.org/10.1108/S0895-993520190000026011>
- Schafft, K. A., Jensen, E. B., & Hinrichs, C. C. (2009). Food deserts and overweight schoolchildren: Evidence from Pennsylvania. *Rural Sociology*, 74(2), 153–177. <https://doi.org/10.1111/j.1549-0831.2009.tb00387.x>
- Shimpo, N., Wesener, A., & McWilliam, W. (2019). How community gardens may contribute to community resilience following an earthquake. *Urban Forestry & Urban Greening*, 38, 124–132. <https://doi.org/10.1016/j.ufug.2018.12.002>
- Sims-Muhammad, T. Y. (2012). After the storms: South Louisiana sustainable food system assessment in light of environmental natural disasters Hurricanes Katrina & Rita. *International Journal of Humanities and Social Science*, 2(3), 129–135.
- Stats NZ. (2020). *Statistical area 1 dataset for 2018 Census*. <https://www.stats.govt.nz/information-releases/statistical-area-1-dataset-for-2018-census-updated-march-2020#regional>
- Stats NZ. (2021). *Statistical Area 1 2022 (generalised)* [Data set]. <https://datafinder.stats.govt.nz/layer/106708-statistical-area-1-2022-generalised>
- Stats NZ Geographic Data Service. (2020). *Urban accessibility 2018 (generalised)*. <https://datafinder.stats.govt.nz/layer/105022-urban-accessibility-2018-generalised>
- Taylor, J. R., & Lovell, S. T. (2012). Mapping public and private spaces of urban agriculture in Chicago through the analysis of high-resolution aerial images in Google Earth. *Landscape and Urban Planning*, 108(1), 57–70. <https://doi.org/10.1016/j.landurbplan.2012.08.001>
- Toi te ora. (2023). *Food security*. <https://toiteora.govt.nz/health-topics/food-security>
- United States Census Bureau. (2023a). *Means of transportation to work by selected characteristics (Table S0802)* [Data set]. <https://data.census.gov/table/ACSST1Y2023.S0802?q=means%20of%20transportation%20to%20work>
- United States Census Bureau. (2023b). *Physical housing characteristics for occupied housing units (Table S2504)* [Data set]. <https://data.census.gov/table?q=vehicle%20ownership>

- University of Otago. (n.d.). *Socioeconomic deprivation indexes: NZDep and NZiDep*. <https://www.otago.ac.nz/wellington/departments/publichealth/research-groups-in-the-department-of-public-health/hirp/socioeconomic-deprivation-indexes-nzdep-and-nzidep-department-of-public-health#2018>
- Voicu, I., & Been, V. (2008). The effect of community gardens on neighboring property values. *Real Estate Economics*, 36(2), 241–283. <https://doi.org/10.1111/j.1540-6229.2008.00213.x>
- Walker, R. E., Keane, C. R., & Burke, J. G. (2010). Disparities and access to healthy food in the United States: A review of food deserts literature. *Health & Place*, 16(5), 876–884. <https://doi.org/10.1016/j.healthplace.2010.04.013>
- Wesener, A. (2015). Temporary urbanism and urban sustainability after a natural disaster: Transitional community-initiated open spaces in Christchurch, New Zealand. *Journal of Urbanism*, 8(4), 406–422. <https://doi.org/10.1080/17549175.2015.1061040>
- Wesener, A. (2020). Growing resilient cities: Urban community gardens and disaster recovery after the 2010/11 Canterbury/Christchurch earthquakes. In D. Brantz & A. Sharma (Eds.), *Urban resilience in a global context: Actors, narratives, and temporalities* (pp. 77–100). transcript Verlag. <https://doi.org/10.14361/9783839450185-005>
- Wesener, A., Vallance, S., Tesch, M., Edwards, S., Frater, J., & Moreham, R. (2022). A mobile sense of place: Exploring a novel mixed methods user-centred approach to capturing data on urban cycling infrastructure. *Applied Mobilities*, 7(4), 327–351. <https://doi.org/10.1080/23800127.2021.1893941>
- World Bank. (2020). *Population density (people per sq. km of land area)* [Data set]. https://data.worldbank.org/indicator/EN.POP.DNST?end=2021&most_recent_value_desc=true&start=1961&view=chart
- World Bank. (2023). *Urban population (% of total population)—New Zealand* [Data set]. <https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS?locations=NZ>
- Zenk, S. N., Schulz, A. J., Israel, B. A., James, S. A., Bao, S., & Wilson, M. L. (2006). Fruit and vegetable access differs by community racial composition and socioeconomic position in Detroit, Michigan. *Ethnicity and Disease*, 16(1), 275–280.
- Zheng, Z.-W., & Chou, R.-J. (2023). The impact and future of edible landscapes on sustainable urban development: A systematic review of the literature. *Urban Forestry & Urban Greening*, 84, Article 127930. <https://doi.org/10.1016/j.ufug.2023.127930>

About the Authors



Andreas Wesener is a senior lecturer in urban design and head of the School of Landscape Architecture at Lincoln University, New Zealand. His research explores approaches for more sustainable and resilient cities. He investigates processes, structures, and meanings that characterise urban environments in times of transition, including experiences of urban space and place, urban atmospheres, post-disaster urbanism, bottom-up governance, integrated (green-grey) urban infrastructure, and urban agriculture, with a particular interest in urban community gardens.



Shannon Davis is a senior lecturer in landscape planning in the School of Landscape Architecture, Lincoln University. She is also a research leader within the Centre of Excellence: Designing Future Productive Landscapes, leading the research theme “Future Foodscapes for Health.” Her research specialises in the areas of landscape planning and assessment, urban design for increased food security, urban agriculture, and peri-urban land use.



Guanyu Chen is a lecturer at the School of Landscape Architecture, Lincoln University. He specialises in landscape performance evaluation, focusing on better understanding the actual performance of built environments. His research contributes to enhancing the rigour of landscape architecture practices while helping landscape architects more effectively communicate the values that their design projects offer. Drawing on a performance-oriented approach, his research collaboration spans a range of research areas, including peri-urban landscape planning, urban agriculture, environmental valuation, and design methodology.

Community-Supported Agriculture in Brazil: Co-Responsibility in Agroecological Production to Strengthen Food Security

Rita de Cássia Lisboa Ribeiro ¹ , Cecilia Rocha ² , and Andhressa Fagundes ^{1,3} 

¹ Nutritional Sciences Graduate Program, Federal University of Sergipe, Brazil

² School of Nutrition, Toronto Metropolitan University, Canada

³ Nutrition Department, Federal University of Sergipe, Brazil

Correspondence: Andhressa Fagundes (andhressa@academico.ufs.br)

Submitted: 30 October 2024 **Accepted:** 25 March 2025 **Published:** 18 June 2025

Issue: This article is part of the issue “Perspectives on Food in the Sustainable City” edited by Birgit Hoinle (University of Hohenheim), Alena Birnbaum (University of Kassel), and Petra Lütke (University of Münster), fully open access at <https://doi.org/10.17645/up.i395>

Abstract

The current shape of the world’s food system has promoted increasingly globalized food models, putting people’s food sovereignty and security at risk. Community-supported agriculture (CSA), a movement grounded on ecologically-based agriculture and an alternative model for marketing and distributing food produced on small farms, was proposed as a means of improving consumers’ eating habits, strengthening local food production, and promoting food sovereignty. This study aimed to identify the potential of CSA as a promoter of food security in Brazil. Based on an integrative literature review, results showed that CSA can guarantee a decent income for family farmers, reducing social vulnerability. Farmers see CSA as an opportunity for income security; consumers engaged with this initiative have perspectives on personal health interests, social justice, and solidarity with farmers. An essential potential for promoting food sustainability was observed, as CSA is strongly influenced by agroecology, and local food production and consumption have a lower impact on carbon dioxide emissions as they require less transportation. However, despite these positive aspects, CSA has suffered a significant limitation in the elitization of this movement, reflecting historical social inequalities in which only a relatively small portion of the population has the privilege of being able to pay for healthier food. It is necessary to think about strategies for getting people who are more socially vulnerable and food insecure to join the movement. In conclusion, CSA has significant potential to promote agroecology, but it needs to rethink better ways of promoting food security.

Keywords

community-supported agriculture; food security; social responsibility; solidarity economy; sustainable agriculture

1. Introduction

The current agro-industrial model of food production has led the world's food supply to display some concerning patterns (Khoury et al., 2014). The Green Revolution and agribusiness emerged with the promise of eradicating hunger by increasing food production. However, although more and more food is being produced, most of this is for animal consumption and is not sustainable (Esteve, 2017; Wojcichoski et al., 2021). A great amount of food produced is wasted, and food insecurity and hunger have not been eradicated (Food and Agriculture Organization of the United Nations [FAO], 2019).

The excessive use of pesticides and transgenic seeds (Ramos et al., 2018) has sustained large-scale food production. In addition to the negative implications for food security and sovereignty, consuming food with a high presence of pesticides harms the environment and the population's health (Carneiro et al., 2015; Instituto Brasileiro de Geografia e Estatística, 2015).

Despite so many chemical and technological resources, the agro-industrial production model has not only failed to solve the problem of food insecurity but has also proved fragile in the face of exceptional circumstances, such as the coronavirus pandemic, when several populations ran out of food (Lal, 2020; Lopes et al., 2020). This has called into question the market character that agribusiness imposes on food, where the priority is to produce commodities for profit. This scenario leads to an urgent need for healthier and more sustainable food production alternatives.

In that way, agroecology has been gaining prominence worldwide, with guidelines that respect and promote peoples' sovereignty and food security. Agroecology is a science that studies sustainable and ecologically based agro-production systems based on rural development from a social, local, and peasant perspective (Esteve, 2017; Souza et al., 2012).

In the specific case of Brazil, food and nutrition security is understood as the right of everyone to regular and permanent access to quality food, in sufficient quantity, without compromising access to other essential needs, based on health-promoting dietary practices that respect cultural diversity and are socially, economically, and environmentally sustainable. Closely related to this concept are the concepts of the human right to adequate food, which is part of the fundamental rights of humanity defined by a global pact to which Brazil is a signatory, and food sovereignty, which refers to the right of each country to determine its policies and sustainable strategies for the production, distribution, and consumption of food for the entire population, respecting the culture of its peoples (Presidência da República, 2006).

Community-supported agriculture (CSA) is a social movement based on agroecology. It is based on an alternative model for producing, marketing, and distributing locally grown food on small, agroecologically based farms, respecting seasonality (Birhalä & Möllers, 2014; Cone & Myhre, 2000; Perez et al., 2005; Vasquez et al., 2017). It is committed to establishing direct communication between farmers and consumers, with a contractual co-responsibility agreement in which the consumer provides capital to the producer before food production. This proposal allows farmers to plan production according to an already guaranteed market, ensuring the flow of their production and providing more security and less waste (Cone & Myhre, 2000; Florisbelo et al., 2020; Soil Association, 2012).

It's important to investigate the feasibility of establishing CSA in urban areas. CSA can bring sustainable and agroecological food production to cities, with consumers having easier access to food producers and getting more knowledge about the production process. CSA can be a space for coexistence and rapprochement between those involved (Florisbelo et al., 2020).

CSA emerged in Japan, where a group of women was alarmed by news of the growing pesticide poisoning, and in parallel, in Europe in the 1970s, when concerns about food safety and sustainable organic food production began. Initially, the system was called "Teikei," and it proposed reconnecting producers and consumers through direct marketing supplies (Vasquez et al., 2017). Only later, in the 1980s, did this movement, CSA, grow in the United States, gaining significant momentum worldwide and establishing itself on five continents (Lopes et al., 2020; Vasquez et al., 2017). A growing number of people interested in healthy eating and concerned about the environment has contributed to the expansion of CSAs worldwide (Dong et al., 2019). There is currently a network of around 2 million families who are part of CSA initiatives around the world under different names, such as Associations pour le maintien d'une agriculture paysanne (AMAP) in France and Relação de Cidadania entre Produtores e Consumidores (Re.Ci.Pro.Co) in Portugal (URGENCI, 2020).

In Brazil, the first CSA was established in São Paulo in 2011, and since then, the movement has been growing throughout the country (Abrandh, 2013; CSA Brasil, 2022; Trivellato et al., 2019). Currently, there are 284 CSAs in operation and 34 CSAs in the process of being created (CSA Brasil, 2022), with a greater concentration in the Southeast and South regions.

The number of studies examining the emergence of CSA initiatives and their impact on food security is still limited. Considering the importance and need to disseminate this topic, both because of the high prevalence of food insecurity and the need to rethink the agro-industrial production model, this study aimed to identify the potential of CSA as a promoter of food security, reflecting on the Brazilian context.

2. Methodology

This is an exploratory analytical study, through a scoping review of the literature, on CSA. The cut-off point for this research was the potential of CSA to promote food security. The literature review was carried out between August 2019 and July 2021 using the Scientific Electronic Library Online (SciELO), National Library of Medicine (PubMed), Web of Science (WoS), and Virtual Health Library (VHL) databases. The descriptors used were: "community-supported agriculture," "CSA," "food security," and "sustainable agriculture," in English and Portuguese. Complementary searches were also carried out on official CSA websites around the world.

Articles, books, and reports on CSA, its history, application techniques, and experience reports were considered eligible. The year of publication was not an exclusion criterion. Articles that did not present CSA as the object of research but only as a mention were excluded. Initially, the articles' titles and abstracts that met the aforementioned eligibility criteria were read. In addition, the references of the eligible studies were also analyzed, as these could broaden the scope of the search. Once selected, an exploratory and analytical reading of the articles was carried out, and the wording was interpreted according to the defined cut-off point. Information was sought on CSA and its potential for promoting food security.

A total of 204 articles were identified by correlating the descriptors shown in Table 1, based on the combination of at least two descriptors during the search. After reading the titles and abstracts, 73 articles of interest were selected, and 40 were considered eligible as they met the objectives of this review—analysis of the relationship between CSA and food security. The publication period ranged from 2000 to 2021, with the most significant volume of publications concentrated between 2015 and 2021.

Table 1. Descriptors underlying the search for scientific articles.

Theme	Number of references found*
CSA	1,421
Food security	7,526
Agroecology	398
Small farms	3,284
Solidarity economy	22,381

Note: * number of references found with independent and uncorrelated variables.

The data from the articles were assessed in terms of the type of study (quantitative, qualitative, or mixed), the year of publication, location, and relevance to the topic, selecting the publications most aligned with the research question. The data were extracted using an Excel table to systematize the information with thematic analysis, calculating the frequency of trends in the findings without using specific software. The discussion below considered the similarities and differences between the studies analyzed. The methodological parameter adopted was the approach proposed by the Joanna Briggs Institute for scoping reviews.

The concept of food security has been debated for many years, and, initially, it was defined only as ensuring the production of enough food to meet the population's needs (Abrandh, 2013; Trivellato et al., 2019). After the Second World War, its definition was gradually broadened, and it currently incorporates the notion of access to safe, quality food in sufficient quantity from sustainable, balanced production with respect for culture to guarantee the human right to adequate food. In line with the concept of food security, food sovereignty is the right of people to decide their own policies and sustainable strategies for the production, distribution, and consumption of food, respecting culture and food diversity (Asociación Nacional de Agricultores Pequeños, 2001). In this context, it can be considered an important strategy to promote the sustainable eradication of hunger and malnutrition (Maluf, 2022; Maluf & da Luz, 2016).

Although food is a human right, FAO reveals that hunger is rising. The report *The State of Food Security and Nutrition in the World*, published in 2023 jointly by five specialized agencies of the United Nations, revealed that 122 million more people have slid into hunger since 2019 due to various crises (pandemic, repeated climate shocks, and conflicts, such as the war in Ukraine). According to this data, around 735 million people will face hunger in 2023, compared to 613 million in 2019 (FAO et al., 2024).

Creating supply chains that are fairer and more responsible towards farmers and the environment, and facilitating access to regional, fresh, and healthy food, has been proposed to promote food security and help overcome a large part of this problem (High Level Panel of Experts on Food Security and Nutrition, 2017; Pedrosa, 2019). From this perspective, CSA has the potential to contribute to these demands, mainly due to the close proximity between consumers and the food growing process, which differs from the conventional food marketing model (Bîrhală & Möllers, 2014; Cone & Myhre, 2000; Perez et al., 2005; Vasquez et al., 2017).

3. Results and Discussion

3.1. CSA

Essentially, CSA takes place based on a contractual agreement of financial co-responsibility in which the consumer shares the production risks with the farmer in abundance and scarcity. In this way, farmers make production finances transparent, allowing consumers to cover the actual cost of food production and the producer's income (Perez et al., 2005; Santos-Neta et al., 2021). Consumers, in turn, participate in the budget planning required for the entire cultivation process over a period previously determined by the group (Amorim, 2018). Producers obtain a fixed income, without bank loans and debts, and consumers receive organic products, with quality and sound provenance (Lal, 2020).

With the movement's evolution, there are currently different CSA subscription models in which consumers receive food boxes weekly, monthly, or quarterly. Contracts are often made online, especially in large urban centers (Perez et al., 2005; Soil Association, 2012). This generates criticism because this virtual format maintains the distance between consumers and the production process, in opposition to what the proposal advocates (Birhală & Möllers, 2014).

Thus, CSA models reflect the culture of the communities they serve, the capacity of the farms, and the farmers (Soil Association, 2012). Table 2 shows the possible CSA models.

White et al. (2018), who conducted a study in the United States, noted that CSA initiatives can facilitate access to fruit and vegetables for low-income families. In agreement with this finding, a review of 12 studies, also from the United States, observed that consumers associated with CSA showed increased consumption of a greater variety of fruits and vegetables, contributing to positive changes in their eating patterns (Vasquez et al., 2017).

Table 2. Models of CSA that can be implemented.

CSA Models	Description
Managed by farmers	Organized and managed by the farmers themselves. The consumer provides the capital and has little involvement in the production process. The producer assembles a box of vegetables and the consumer goes to the farm to pick it up.
Managed by co-farmers (consumers)	Consumers participate in the production process by collaborating with the farmer. This involvement can vary according to the agreement between the parties.
Farmers' cooperative	Two or more farms cooperate to provide consumers with a greater variety of products.
Cooperative of farmers and co-farmers	A similar model to the farmers' cooperative, but with greater consumer involvement. In this case, consumers can share private properties and/or other resources with farmers, as well as work together in the production and distribution of food.

Source: Soil Association (2012).

A study carried out with CSA initiatives in São Paulo had similar results: Being part of a CSA provides healthier food, brings consumers closer to agriculture, and empowers farmers, as they receive support from the community to face the risks inherent in the food production process (Amorim, 2018).

In addition to the potential to improve eating habits, in a co-responsibility agreement, the consumer, in some cases, can also play the role of co-farmer since, ideally, they are not restricted to purely financial support. Closer relationships, as the basis of CSA principles, allow consumers (co-farmers) to participate in and accompany the process of growing food, and with more significant contact with the field there is an increase in learning and awareness of seasonal, climatic, and regional issues (Florisbelo et al., 2020).

CSA has significant economic potential and can help reduce poverty and inequality in rural areas. The high social vulnerability of family farmers (Altieri, 2013; Cechin et al., 2020; Santos-Neta et al., 2021) makes them deserving beneficiaries of a solidarity economy model capable of increasing and strengthening the expansion of organic food marketing (Bîrhală & Möllers, 2014; Santos-Neta et al., 2021). In his study of CSA initiatives in São Paulo, Amorim (2018) considered that this model could increase the earnings of organic farmers by eliminating middlemen, who make farmers invisible in the conventional marketing of their products.

Using ecologically responsible agriculture, CSA benefits consumers, farmers, and the environment. It encourages local food consumption, reduces the impact of carbon dioxide emissions from transportation, and reduces the use of plastic packaging (Henderson, 2010). This marketing system has had repercussions in several developing countries due to promoting more sustainable food production, conscious consumption, and the valorization of family, rural, and urban agriculture (Melo et al., 2020). In addition to several aspects that CSA and urban agriculture have in common, such as encouraging local food production, bringing consumers and farmers closer together, reducing the food route and, consequently, the carbon footprint, providing healthy food at fair prices, and improving people's socio-economic conditions, CSA can be carried out in urban spaces, creating green and biodiverse spaces in cities (Florisbelo et al., 2020).

Therefore, agroecology can significantly positively impact local income, the environment, and food sovereignty since family farmers produce on an agroecological basis and understand the value of their work and its importance in making healthy food that respects nature, consumers, and local culture (Nascimento et al., 2019). It also contributes to species biodiversity through sustainable, ecologically based agriculture (Haby et al., 2016; Reiniger et al., 2017).

These characteristics of CSA are reinforced by its solidarity economy model, which meets the demand to respect nature and value human labor without promoting wealth accumulation and, consequently, social inequality. It is based on a democratic alternative, in which it is possible to observe diversity among the actors in the production unit or the different areas and processes related to the community (Mira et al., 2018). In Amorim's study (2018), CSA initiatives included both traditional family farmers and people who decided to migrate to agriculture because they saw an opportunity for fair working conditions, which aligns with the principles of agroecology.

An important aspect to highlight is that consumers' motivation for participating in CSA is, in addition to issues related to health, the preservation of the environment. Most consumers participating in CSAs report concern for the environment and desire organic, high-quality, locally grown products (Ribeiro et al., 2023; Rotoli, 2016).

In this scenario, CSA can be considered a means of strengthening agroecology because it goes against the conventional and hegemonic model (Pedrosa, 2019; Santos-Neta et al., 2021). This brings consumers and local farmers closer through bonds based on ethical and trustworthy economic relationships (Ertmańska, 2015), favoring organic, agroecological, or biodynamic food production (Pedrosa, 2019).

In 2020, the Covid-19 pandemic changed the world in several areas, including food. The crisis caused by the pandemic exposed the fragility of the conventional model of food production and distribution in the face of adverse situations, highlighting the results of some studies that showed that alternative food networks, such as CSA, managed to be resilient in the process of readapting to the conditions imposed by the pandemic (Lal, 2020; Lopes et al., 2020). This is because the conventional model is characterized by transporting food over long distances, demanding energy/fuel and, consequently, being more vulnerable to unexpected interruptions (Lal, 2020).

The Covid-19 pandemic has had multidimensional impacts on small farmers in terms of production, marketing, income, and health. For example, the closure of schools during the pandemic significantly reduced the National School Feeding Program's food supply from small producers. However, collective movements such as CSA have also contributed positively to overcoming these difficulties (Futemma et al., 2020), fulfilling the proposal to respond to the social demands of small farmers, even in adverse situations such as the pandemic (Amorim, 2018; Torres, 2017).

When considering the Covid-19 pandemic context, it is essential to highlight the difficulty of accessing food due to the global economic crisis, the increase in mass unemployment, and the risks of contamination inherent in the long-chain industrial food system. That situation demonstrated the possibility of guaranteeing food for families through a sovereign system of local food distribution with short-chain agro-sustainable models such as CSA. Such strategy avoided increasing the risk of spreading the contamination from the virus (URGENCI, 2020).

Financial vulnerability is a significant problem that small farmers face in the countryside due to the historical unfair competition with the agro-industrial model. This has also led to the complete alienation of consumers from the food production process (Bîrhală & Möllers, 2014; van Nieuwkoop, 2024). In the opposite direction, local production offers potential strategies to overcome these difficulties. By removing intermediaries from the production network, food prices become fairer, and farmers are guaranteed income and autonomy, not least because of the security of the sale, which is contracted in advance. In addition, CSA also removes the farmer from the position of anonymity, meeting the actual demands of consumers and establishing a link between producer and consumer (Mira et al., 2018).

CSA presents itself as an essential model of solidarity economy, capable of increasing the supply of jobs in rural areas and strengthening the expansion of organic food production and consumption (Bîrhală & Möllers, 2014). It challenges the agro-industrial model through shortening food supply chains so that the capital invested in food production remains at the local level, strengthening family farming (Allen et al., 2017).

The CSA model, however, has also shown some limitations. Some studies, for example, have pointed out a fluctuation in the number of consumers from one year to the next, undermining the security the model promises farmers. Some of the reasons pointed out for such fluctuation have included the waste of food,

which is often provided in large quantities, and the lack of variety and/or freedom of choice of the items that would be consumed by families (Curtis et al., 2013; Pedrosa, 2019), reflecting the commodity value that the agro-industrial model has attributed to food.

Another significant limitation of CSA concerns the “elitization” of the movement, reflecting social inequality, in which a small group of society has the privilege of being able to afford healthier food, while the rest have no choice. Although CSA is proposed as an alternative model to promote food and social justice (hence, food security), studies show that its growth has not occurred in a socially equalitarian way. The greater adherence has come from people (consumers) with higher purchasing power, who can afford higher food prices for higher quality food, and who have the financial security to share production risks with farmers. Because of this, CSA is often criticized as an elitist movement (Birhală & Möllers, 2014; Galt, 2011). Elitization is a key criticism because those most in need continue to be unable to benefit from CSA programs.

Some strategies can potentially reduce the elitist nature of the CSA movement. The implementation of public programs and policies can have a very positive impact on reducing social inequalities, making the model more inclusive and accessible to vulnerable populations. To encourage the development of CSA initiatives, more investment by the public sector is needed (Altieri, 2013; van Nieuwkoop, 2024). This could include programs for infrastructure (improvement of roads in rural areas, internet access to facilitate the flow of production and communication, construction of irrigation systems); credit programs to strengthen family farming among small and medium-sized producers and cooperatives; training in assistance and technical support for sustainable practices, as well as the expansion of the National Program for Strengthening Family Farming; incentives for marketing and selling products (creation of fairs, local markets, and government purchase programs for rural producers); programs to encourage and value sustainability and environmental conservation (subsidies for farmers for ecological services that preserve forests and water resources, incentives for sustainable management practices and recovery of degraded areas); and programs for social inclusion and strengthening cooperatives (support for farmers’ associations and cooperatives, programs to encourage rural succession).

Although CSA initiatives do not have the power to bring about more significant changes in the food system because they operate on a small scale, this alternative model of the relationship between consumers and producers is an excellent seed for this transformation (Santos-Neta et al., 2021). With the right public policies, CSA can move from diversifying food availability to strengthening food production, encouraging people to stay in rural areas and grow food.

3.2. Food Insecurity and CSA in Brazil

In Brazil, food sovereignty is proposed as necessary to contemplate the human right to adequate food (Abrandh, 2013). The Brazilian state has carried out essential actions to meet this right, such as popular restaurants, food banks, direct income transfer programs, the Food Acquisition Program (PAA), and the National School Feeding Program (PNAE). These programs recommend that respect for diversity, tradition, food culture, citizen autonomy, food sovereignty, and the principles of food security are considered (Fagundes et al., 2022).

Despite various policies, Brazil still suffers from a high prevalence of food insecurity (Instituto Brasileiro de Geografia e Estatística, 2015, 2020; Osanes, 2018), mainly due to the difficulty in accessing quality, safe food that respects food sovereignty. Between 2014 and 2016, around 4 million people lived in a situation of food vulnerability in Brazil, corresponding to 1.9% of the population. Aggravating the problem, the Household Budget Survey (Pesquisa de Orçamento Familiar) showed that, in 2018, around 36.7% of the population had some level of food insecurity (84.9 million), with 24.0% suffering from mild food insecurity, 8.1% from moderate food insecurity, and 4.6% from severe food insecurity (Instituto Brasileiro de Geografia e Estatística, 2020).

During the Covid-19 pandemic, the food insecurity scenario got even worse, reaching 55.2% food insecurity at the end of 2020. Of this total, around 9% of the population, 19.1 million Brazilians, lived in severe food insecurity, suffering from hunger. In 2022, this figure reached 33.1 million, more concentrated in the North and Northeast regions of the country (PenSSAN, 2022). To aggravate the debate, these results were measured using the Brazilian Food Security Scale, which only measures access to food, regardless of quality (Almeida et al., 2017). Food insecurity in the country may be even more critical from a perspective that considers food quality, respect for culture, and the environment.

Regarding CSA initiatives in Brazil, a country with a sizeable territorial extension, there is a very uneven distribution between its regions. There are around 22 CSA initiatives in operation or in the process of being created in the Northeast (poorer region), while the Southeast (more affluent region) has more than 120 CSA examples (Figure 1; CSA Brasil, 2024). The Northeast has the highest concentration of family farming establishments (Landau, 2013), with the states of Pernambuco, Sergipe, and Alagoas leading the highest



Figure 1. Distribution of CSA initiatives in Brazil, 2024. Source: CSA Brasil (2024).

densities of these establishments. It is also the region with the highest concentration of households presenting some level of food insecurity—50.3% of the population (Instituto Brasileiro de Geografia e Estatística, 2020). These numbers may indicate an inverse association between the number of CSA initiatives and the Human Development Index in those regions (Bezerra et al., 2020).

In addition to food insecurity due to lack of access to food, changes in eating habits due to increasingly globalized food markets put people's food sovereignty at risk because, in most cases, people don't even know what they are eating, where the food came from, or how it was produced (Paiva, 2014). The globalization of food is resulting in a loss of food heritage and diversity (Esteve, 2017). The current globalized production model consequently leads to the standardization of people's palates, overshadowing the understanding of food as a historical, cultural, and sovereign heritage (Paiva, 2014; Stedile, 2013).

4. Conclusion

The CSA movement has grown worldwide due to its proposal for a sustainable food system and its economic, cultural, and political advantages. Despite the limitations of unequal territorial expansion and elitization reflecting social inequality in many places, CSA has promoted an increase in the consumption of healthier food based on a model that contributes to respecting seasonal, climatic, and regional issues, as well as strengthening local production of food supplies. It is a community solidarity initiative that supports local production, connecting the countryside and the city.

Moments of global crisis, such as the Covid-19 pandemic, highlight the need for food models with ever-smaller production networks. These networks should meet local demands, as with CSA, and be based on local production and reducing the long distances traveled by food, causing less impact through carbon dioxide emissions. In this way, it is possible to promote the economic sustainability of farmers, access to safe food for the population, and a better synergy between the food production process and the environment. Unfortunately, choosing a better quality and environmentally sustainable food is still not everyone's right. It is the privilege of a few, especially given the social inequality that exists in some places. There is a need to think about more democratized production formats that can also attract a low-income public.

Despite all its potential, studies so far have not shown a significant impact of CSA in reducing food insecurity – neither among farmers nor among consumers. The elitization associated with CSA results from the type of producers and consumers who can better afford to participate in it. The consumers who access CSA are in a relative privileged situation under which they can finance the products in advance. Thus, while many studies have demonstrated the benefits of CSA, such as healthy eating and a more sustainable environment, a more detailed assessment on how it can impact social justice would be desirable. It would be interesting to conduct longitudinal and cost studies of CSA baskets and determine to what extent they reach small farmers and the poorest populations. It is necessary to think about strategies to increase the uptake of CSA among the most socially vulnerable and food insecure people, who, along with family farmers, are the ones most in need of movements like this.

Acknowledgments

The authors thank everyone who contributed directly and indirectly to this study, particularly the farmers and consumers who responded to the survey.

Funding

This study was financed in part by the Foundation to Support Research and Technological Innovation in the State of Sergipe (Fundação de Apoio à Pesquisa e à Inovação Tecnológica do Estado de Sergipe – Fapitec/SE, Brasil) and the Coordination for the Improvement of Higher Education Personnel (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – Capes, Brasil – Finance Code 001).

Conflict of Interests

The authors declare no conflict of interests.

References

- Abrandh. (2013). *O direito humano à alimentação adequada e o sistema nacional de segurança alimentar e nutricional* (Vol. 1, 1st ed.). https://www.mds.gov.br/webarquivos/publicacao/seguranca_alimentar/DHAA_SAN.pdf
- Allen, J. E., Rossi, J., Woods, T. A., & Davis, A. F. (2017). Do community supported agriculture programs encourage change to food lifestyle behaviours and health outcomes? New evidence from shareholders. *International Journal of Agricultural Sustainability*, 15(1), 70–82. <https://doi.org/10.1080/14735903.2016.1177866>
- Almeida, J. A., Santos, A. S., Nascimento, M. A. D. O., Oliveira, J. V. C., Silva, D. G. D., & Mendes-Netto, R. S. (2017). Factors associated with food insecurity risk and nutrition in rural settlements of families. *Ciência & Saúde Coletiva*, 22(2), 479–488. <https://doi.org/10.1590/1413-81232017222.27102015>
- Altieri, M. (2013). *Agroecologia: Bases científicas para uma agricultura sustentável* (3rd ed.). Expressão Popular.
- Amorim, J. (2018). *Comunidade que Sustenta a Agricultura (CSA) em São Paulo e Agricultura Solidária (SoLaWi) na Alemanha: Construindo indicadores sociais, econômicos e ambientais* [Unpublished doctoral dissertation]. Universidade Federal de São Carlos.
- Asociación Nacional de Agricultores Pequeños. (2001). *Declaración final del Foro Mundial sobre Soberanía Alimentaria La Habana, Cuba, 7 de septiembre del 2001. Por el derecho de los pueblos a producir, a alimentarse y a ejercer su soberanía alimentaria*.
- Bezerra, M. S., Jacob, M. C. M., Ferreira, M. A. F., Vale, D., Mirabal, I. R. B., & Lyra, C. O. (2020). Food and nutritional insecurity in Brazil and its correlation with vulnerability markers. *Ciência & Saúde Coletiva*, 25(10), 3833–3846. <https://doi.org/10.1590/1413-812320202510.35882018>
- Bîrhală, B., & Möllers, J. (2014). *Community supported agriculture in Romania: Is it driven by economy or solidarity?* (Discussion Paper No. 144). Leibniz Institute of Agricultural Development in Transition Economies.
- Carneiro, F. F., Augusto, L. G. d. S., Rigotto, R. M., Friedrich, K., & Búrigo, A. C. (2015). *Dossiê Abrasco: Um alerta sobre os impactos dos agrotóxicos na saúde*. Expressão Popular.
- Cechin, A., Silva Araújo, V., & Amand, L. (2020). Exploring the synergy between community supported agriculture and agroforestry: Institutional innovation from smallholders in a Brazilian rural settlement. *Journal of Rural Studies*, 81, 246–258. <https://doi.org/10.1016/j.jrurstud.2020.10.031>
- Cone, C. A., & Myhre, A. (2000). Community-supported agriculture: A sustainable alternative to industrial agriculture? *Human Organization*, 59(2), 187–197. <https://doi.org/10.17730/humo.59.2.715203t206g2j153>
- CSA Brasil. (2024). *CSA Brasil. Comunidade que Sustenta a AGRICULTURA: da cultura do preço para a cultura do apreço*. <https://csabrasil.org/csa/>
- Curtis, K., Ward, R., Allen, K., & Slocum, S. (2013). Impacts of community supported agriculture program participation on consumer food purchases and dietary choice. *Journal of Food Distribution Research*, 44(1), 42–51.

- Dong, H., Campbell, B., & Rabinowitz, A. N. (2019). Factors impacting producer marketing through community supported agriculture. *PLoS ONE*, 14(7), Article e0219498. <https://doi.org/10.1371/journal.pone.0219498>
- Ertmańska, K. (2015). Community supported agriculture (CSA) as a form of sustainable consumption. *Acta Scientiarum Polonorum: Oeconomia*, 14(2), 51–59. <https://aspe.sggw.edu.pl/article/view/445>
- Esteve, E. V. (2017). *O negócio da comida: Quem controla nossa alimentação?* Expressão Popular.
- Fagundes, A., de Cássia Lisboa Ribeiro, R., de Brito, E. R. B., Recine, E., & Rocha, C. (2022). Public infrastructure for food and nutrition security in Brazil: Fulfilling the constitutional commitment to the human right to adequate food. *Food Security*, 14(4), 897–905. <https://doi.org/10.1007/s12571-022-01272-1>
- Florisbelo, G. R., Melo, A. M., Freitas, A. F., & Pinheiro, D. C. (2020). Comunidade que sustenta a agricultura: Segurança alimentar e nutricional na agricultura urbana de Sete Lagoas (MG). *Revista de Extensão e Estudos Rurais*, 9(1). <https://periodicos.ufv.br/rever/article/view/3859>
- Food and Agriculture Organization of the United Nations. (2019). *School Food and Nutrition Framework*.
- Food and Agriculture Organization of the United Nations, International Fund for Agricultural Development, UNICEF, World Food Programme, & World Health Organization. (2024). *The state of food security and nutrition in the world 2024: Financing to end hunger, food insecurity and malnutrition in all its forms*. <https://openknowledge.fao.org/handle/20.500.14283/cd1254en>
- Futemma, C., Tourne, D. C. M., Andrade, F. A. V., Santos, N. M. d., Macedo, G. S. S. R., & Pereira, M. E. (2021). *A pandemia da Covid-19 e os pequenos produtores rurais: Superar ou sucumbir?* Bol. Mus. Para. Emílio Goeldi. Cienc. Hum., Belém, v. 16, n. 1, e20200143. <https://doi.org/10.1590/2178-2547-BGOELDI-2020-0143>
- Galt, R. E. (2011). Counting and mapping community supported agriculture (CSA) in the United States and California: Contributions from critical cartography/GIS. *Acme*, 10(2), 131–162.
- Haby, M. M., Chapman, E., Clark, R., & Galvão, L. A. C. (2016). Agriculture, food, and nutrition interventions that facilitate sustainable food production and impact health: An overview of systematic reviews. *Revista Panamericana de Salud Pública/Pan American Journal of Public Health*, 40(1), 48–56.
- Henderson, E. (2010). CSA History: Community Supported Foods and Farming [Keynote for Urgenci Kobe Conference 2010]. *Urgenci: The International Network for Community-Supported Agriculture*. <https://urgenci.net/csa-history/>
- High Level Panel of Experts on Food Security and Nutrition. (2017). *Nutrition and food systems: A report by the High Level Panel of Experts on Food Security and Nutrition*. Committee on World Food Security.
- Instituto Brasileiro de Geografia e Estatística. (2015). *Pesquisa Nacional por Amostra de Domicílios (PNAD): Síntese de indicadores 2013*. <https://biblioteca.ibge.gov.br/index.php/biblioteca-catalogo?view=detalhes&id=294414>
- Instituto Brasileiro de Geografia e Estatística. (2020). *Pesquisa de orçamentos familiares: 2017-2018. Análise da segurança alimentar no Brasil*.
- Khoury, C. K., Bjorkman, A. D., Dempewolf, H., Ramirez-Villegas, J., Guarino, L., Jarvis, A., Rieseberg, L. H., & Struik, P. C. (2014). Increasing homogeneity in global food supplies and the implications for food security. *Proceedings of the National Academy of Sciences*, 111(11), 4001–4006. <https://doi.org/10.1073/pnas.1313490111>
- Lal, R. (2020). Home gardening and urban agriculture for advancing food and nutritional security in response to the Covid-19 pandemic. *Food Security*, 12, 871–876.
- Landau, E. C. (2013). *Concentração geográfica da agricultura familiar no Brasil*. Embrapa Milho e Sorgo.
- Lopes, I. B., Viana, M. M., & Alfinito, S. (2020). Redes alimentares alternativas em meio à Covid-19: Reflexões sob o aspecto da resiliência. *Revista Eletrônica Gestão & Sociedade*, 14(39), 3750–3758. <https://doi.org/10.21171/ges.v14i39.3265>

- Maluf, R. S., & Burlandy, L. (2022). *Sistemas alimentares, desigualdades e saúde no Brasil: Desafios para a transição rumo à sustentabilidade e promoção da alimentação adequada e saudável*. Fundação Oswaldo Cruz.
- Maluf, R. S., & da Luz, L. F. (2016). *Sistemas alimentares descentralizados: Um enfoque de abastecimento na perspectiva da soberania e segurança alimentar e nutricional* (Texto de Conjuntura No. 19). Observatório de Políticas Públicas para a Agricultura.
- Melo, A. M., Freitas, A. F. D., & Calbino, D. (2020). Comunidade que Sustenta a Agricultura (CSA): Panorama das pesquisas brasileiras. *Colóquio - Revista do Desenvolvimento Regional*, 17(2), 82–99. <https://doi.org/10.26767/coloquio.v17i2.1663>
- Mira, P. M., Iunes, C. S., Ramos-Filho, L. O., Neves, M. C., & Queiroga, J. L. (2018). Consumo Responsável e Economia Solidária como Estratégia de Comercialização para Agricultura Familiar. *Agroecol: Sistemas agroalimentares, sociobiodiversidade, saúde e educação: desafios e perspectivas.*, 1, 10. <https://www.alice.cnptia.embrapa.br/alice/bitstream/doc/1106646/1/2018AA56.pdf>
- Nascimento, S. G., Becker, C., Silva, F. N., & Caldas, N. V. (2019). Produção agroecológica e segurança alimentar e nutricional (Brasil). *Revista de Ciências Agrárias*, 42(1), 291–300. <https://doi.org/10.19084/RCA18223>
- Osanes. (2018). *Relatório de Indicadores de Segurança Alimentar e Nutricional do Estado de Sergipe* (Vol. 1, 1st ed.). Infographics.
- Paiva, M. C. S. (2014). *Insegurança alimentar e os assentamentos como espaços de resistência aos descaminhos da alimentação da produção ao consumo: A ação do MST no Distrito Federal e Entorno* [Unpublished master's thesis]. University of Brasília. <http://repositorio.unb.br/handle/10482/15548>
- Pedrosa, A. P. P. (2019). *Redes agroalimentares alternativas e suas implicações para a política social: As motivações dos consumidores das Comunidades que Sustentam a Agricultura no Brasil* [Unpublished master's thesis]. University of Lisbon. <https://www.repository.utl.pt/bitstream/10400.5/18405/1/Disserta%c3%a7%c3%a3o%20final%20vers%c3%a3o%20biblioteca.pdf>
- Presidência da República. (2006). *Cria o Sistema Nacional de Segurança Alimentar e Nutricional (Sisan), com vistas em assegurar o direito humano à alimentação adequada e dá outras providências* (Pub. L. No. 11.346 de 15 de setembro de 2006). https://www.planalto.gov.br/ccivil_03/_Ato2004-2006/2006/Lei/L11346.htm
- Rede PenSSAN (2021). *VIGISAN: National Survey of Food Insecurity in the Context of the Covid-19 Pandemic in Brazil*. (p. 17) Fundação Friedrich Ebert. https://olheparaafome.com.br/VIGISAN_AF_National_Survey_of_Food_Insecurity.pdf
- Ribeiro, R. de C. L., Barbosa, K. B. F., & Fagundes, A. A. (2023). *Comunidade que Sustenta a Agricultura, segundo olhar de agricultores e consumidores de feiras agroecológicas de Aracaju, Sergipe*. *Raízes: Revista de Ciências Sociais e Econômicas*, 43(1), 1–20. <https://doi.org/10.37370/raizes.2023.v43.816>
- Perez, J., Brown, M., & Miles, A. (2005). *Teaching direct marketing and small farm viability* (2nd ed.). Center for Agroecology & Sustainable Food Systems.
- Ramos, R. F., Andrioli, A. I., & Betemps, D. L. (2018). Agrotóxicos e transgênicos: Uma crítica popular. *Extensão em Foco*, 17, 40–53. <https://doi.org/10.5380/ef.v0i17.58250>
- Reiniger, L. R. S., Wizniewsky, J. G., & Kaufmann, M. P. (2018). *Princípios da agroecologia* (Vol. 1, 1st ed.). UAB; NTE; UFSM. <https://www.bibliotecaagptea.org.br/agricultura/agroecologia/livros/PRINCIPIOS%20DE%20AGROECOLOGIA.pdf>
- Ribeiro, R. C. L., Barbosa, K. B. F., & Fagundes, A. A. (2023). A comunidade que sustenta a agricultura, segundo olhar de agricultores e consumidores de feiras agroecológicas de Aracaju, Sergipe. *Raízes: Revista de Ciências Sociais e Econômicas*, 43(1), 1–20. <https://doi.org/10.37370/raizes.2023.v43.816>
- Rotoli, L. U. M. (2016). *Análise da relação entre produtor e consumidor vinculados à CSA (Community Supported Agriculture) do estado de São Paulo sob a ótica da economia dos custos de transação* [Unpublished master's thesis]. Universidade Estadual Paulista, São Paulo, Brazil.

- Santos-Neta, M. C., Schultz, G., & Souza, M. (2021). Comunidade que sustenta a agricultura (CSA): Representa uma tendência de transição do sistema agroalimentar? *Colóquio – Revista do Desenvolvimento Regional*, 19(1), 169–190. <https://doi.org/10.26767/2352>
- Soil Association. (2012). *A share in the harvest: An action manual for community-supported agriculture* (2nd ed.).
- Souza, A. A. d., Santos, P. C. T., & Bezerra, O. M. P. A. (2012). *Agroecologia* (1st ed.). Converso Comunicação.
- Stedile, J. P. (2013). *A questão agrária no Brasil* (1st ed.). Expressão Popular.
- Torres, C. L. (2017). *Comunidade que Sustenta a Agricultura: A reaplicação da tecnologia social a partir dos casos pioneiros em Brasília*. Universidade de Brasília.
- Trivellato, P. T., Morais, D. d. C., Lopes, S. O., Miguel, E. d. S., Franceschini, S. d. C. C., & Priore, S. E. (2019). Food and nutritional insecurity in families in the Brazilian rural environment: A systematic review. *Ciência & Saúde Coletiva*, 24(3), 865–874. <https://doi.org/10.1590/1413-81232018243.05352017>
- Urgenci. (2020). *Community Supported Agriculture is a safe and resilient alternative to industrial agriculture in the time of Covid-19*. https://urgenci.net/wp-content/uploads/2020/04/URGENCI_Covid19_PR_20200407.pdf
- van Nieuwkoop, M. (2024, February 22). Financing the agrifood system transformation—There is no lack of money to do it. *Agriculture & Food*. <https://blogs.worldbank.org/en/agfood/financing-agrifood-system-transformation-there-no-lack-money-do-it>
- Vasquez, A., Sherwood, N. E., Larson, N., & Story, M. (2017). Community-supported agriculture as a dietary and health improvement strategy: A narrative review. *Journal of the Academy of Nutrition and Dietetics*, 117(1), 83–94. <https://doi.org/10.1016/j.jand.2016.09.029>
- White, M. J., Jilcott Pitts, S. B., McGuirt, J. T., Hanson, K. L., Morgan, E. H., Kolodinsky, J., Wang, W., Sitaker, M., Ammerman, A. S., & Seguin, R. A. (2018). The perceived influence of cost-offset community-supported agriculture on food access among low-income families. *Public Health Nutrition*, 21(15), 2866–2874. <https://doi.org/10.1017/S1368980018001751>
- Wojcichoski, N. d. S., Guerin, M., & Salvagni, J. (2021). As corporações do setor agropecuário: Uma análise dos impactos ambientais na produção e consumo de animais. In L. Calgaro (Ed.), *Constitucionalismo e meio ambiente, Tomo IV: Diretrizes de políticas públicas socioambientais* (1st ed., pp. 697–717). Editora Fi. <https://doi.org/10.22350/9786559170807>

About the Authors



Rita de Cássia Lisboa Ribeiro is a nutritionist, bachelor and master in nutrition sciences, both from the Federal University of Sergipe. She was the social technology projects in health coordinator at the Institute for Research in Technology and Innovation of Sergipe. She provided technical support to the Observatory for Food and Nutritional Security in the State of Sergipe (OSANES).



Cecilia Rocha is Professor Emerita of the School of Nutrition at Toronto Metropolitan University (TMU) in Canada and has a PhD and MA in economics from York University. She is also the coordinator of the Betinho Project and past director of the Centre for Studies in Food Security at TMU. She has extensive international experience in the field of food and nutrition security.



Andhressa Fagundes is a nutritionist and a professor in the Department of Nutrition and in the Postgraduate Program in Nutritional Sciences at the Federal University of Sergipe. She works in public health, nutrition, and food safety. She worked in government managerial positions and is the coordinator of the Food and Nutrition Education Laboratory Research Group.

Consumers' Willingness to Pay for Organic Foods in Tehran: A Mixed-Methods Study

Arezou Babajani ¹ , Senour Ahmadi ² , Christine Wieck ¹ , Azad Ahmadi ³ ,
and Mohammad Babajani ⁴ 

¹ Institute of Agricultural Policy and Markets, University of Hohenheim, Germany

² Department of Economics, University of Foggia, Italy

³ Department of Economics, Payame Noor University, Iran

⁴ Department of Biology, Islamic Azad University of Tehran, Iran

Correspondence: Arezou Babajani (arezou.babajani@uni-hohenheim.de)

Submitted: 28 November 2024 **Accepted:** 7 April 2025 **Published:** 20 August 2025

Issue: This article is part of the issue “Perspectives on Food in the Sustainable City” edited by Birgit Hoinle (University of Hohenheim), Alena Birnbaum (University of Kassel), and Petra Lütke (University of Münster), fully open access at <https://doi.org/10.17645/up.i395>

Abstract

In Iran, despite the limited development and enforcement of certification systems, consumers' interest in organic food is growing. However, the organic market is still emerging. Therefore, the current study investigates the factors influencing consumers' willingness to pay for organic fresh products (fruits and vegetables), while also exploring key consumer-driven priorities for strengthening the sector. The study employed a sequential qualitative-quantitative approach. First, 16 Iranian experts were consulted in two rounds to identify the influencing variables, using the Delphi method. Subsequently, a mixed-methods approach was used for data collection and analysis. This survey was conducted in 2024 among 214 consumers at vegetable markets across 22 regions of Tehran. The data was analyzed using multiple regression to determine the main influencing factors. The results showed that consumers' willingness to pay for organic food is positively influenced by their perceptions of organic products and higher income levels. Furthermore, factors such as age, attitudes toward agrochemicals, and the perception of higher costs significantly impact consumers' willingness to pay for organic products in Tehran. This study also highlights the role of the certification system in building consumer trust, noting that while organic production organizations exist in Iran, the certification framework remains fractured and lacks broad consumer recognition. A key contribution of this study relates to its mixed approach, providing in-depth perspectives on consumer preferences in an expanding organic market. The qualitative findings further underscore the importance of establishing designated organic markets, reinforcing certification and labeling systems, and targeting consumer education to increase awareness and trust in organic products.

Keywords

consumer attitudes; organic food consumption; organic food policy; organic foods in Iran; willingness to pay

1. Introduction

Organic production refers to a method of farming that does not utilize synthetic chemicals, pesticides, or genetically modified organisms. Global trade in organic products reached \$220 billion in 2018 and is projected to grow to \$620 billion by 2026 (Khanghan, 2020; Willer et al., 2020). This growth reflects increasing consumer demand for health-conscious, sustainable, and environmentally friendly food.

According to global statistics, the total area under organic cultivation reached 71.5 million hectares in 2018 (Willer et al., 2020). The geographical distribution of organic farming shows that many high-income regions allocate a greater share of their agricultural land to organic production. A total of 16 countries dedicate more than 10% of their agricultural land to organic farming, whereas in many low- and middle-income countries, including Iran, this figure remains low. In Iran, less than 0.01% of farmland is organic, despite modest growth since 2016 (Khanghan, 2020).

Although organic agriculture in Iran is expanding slowly, consumer attitudes are increasingly favorable. Studies indicate growing public expectations for farmers to adopt environmentally responsible practices (Yazdanpanah et al., 2022a, 2022b). Nevertheless, aligning this consumer demand with actual organic production remains a significant challenge.

Iranian consumers are increasingly associating organic food with health and environmental benefits, influenced by education and rising awareness (Baba Akbari Sari et al., 2009; Bazhan et al., 2023). Willingness to pay (WTP) is influenced by income, education, health consciousness, and trust in organic labels (Khaerolahi et al., 2021). Global studies have explored organic food purchasing behavior through demographic, attitudinal, and socio-cultural lenses (Ahmad et al., 2010; Aschemann-Witzel & Zielke, 2017; Paul & Rana, 2012; Yilmaz, 2023). In Iran, despite growing interest, the organic market faces significant structural challenges, including high prices, inadequate infrastructure, and limited government support (Mahdavi et al., 2020). Although consumers are placing higher value on health and sustainability (White et al., 2019), adoption is constrained by affordability and limited trust. The extant literature provides a foundation for organic development (Babajani et al., 2015; Koocheki & Ghorbani, 2005; Veisi et al., 2017), and awareness of organic vegetables is relatively high (Alizadeh et al., 2008). Nevertheless, substantial obstacles persist, including price sensitivity, limited certification, inadequate labeling, and minimal advertising (Ghazanfari et al., 2024; Ghofrani et al., 2017; Haghjou et al., 2013). Trust remains a critical factor in this context (Canova et al., 2020). The concept of affordability is inherently linked to factors such as income, accessibility, and market scale. As global demand has been demonstrated to facilitate cost reductions (see Janská et al., 2020; Pandey et al., 2019), it is imperative to understand consumer preferences and the willingness to pay to achieve market expansion (see Nandi et al., 2017). While awareness is increasing in Iran, particularly in urban centers such as Tehran, the factors influencing WTP remain under-explored. The objective of this study is to address this knowledge gap by identifying the key influences on WTP and consumer strategies to support organic market development. The city's substantial population, significant income inequality, and concentrated organic markets make it a noteworthy case for studying WTP.

The city's socioeconomic diversity helps explore how affordability and access influence consumer behavior. As urban areas lead in changing consumption patterns, understanding urban WTP for organic food is crucial. This study employs a mixed-methods approach to explore Iranian consumers' WTP and propose measures to promote organic markets, particularly in Tehran. For this study, "organic" refers specifically to products that meet certified organic standards, distinguishing them from "natural" products that lack formal certification.

2. Literature Review

To provide a structured overview of existing literature, this section is divided into three main areas. First, we examine the primary drivers of WTP for organic food, focusing on factors such as health concerns, environmental responsibility, and income. Second, we investigate barriers to organic food consumption, including price sensitivity, limited availability, and lack of trust in organic certification. Finally, we discuss theoretical models, with an emphasis on the theory of planned behavior, which explains organic purchasing decisions.

2.1. Drivers of WTP

The global growth in organic production has been attributed in the literature to increased consumer environmental awareness, as reflected in consumer knowledge and attitudes (Fraj & Martinez, 2006; Thøgersen, 2016). The gradual rise in environmental concerns has brought this issue into mainstream public discourse (Paul & Rana, 2012), along with the belief that food choices can contribute to addressing environmental challenges (Ghali-Zinoubi & Toukabri, 2019; Grunert et al., 2014).

Health concerns and perceptions of product quality also play a central role in motivating organic food consumption (Hansen et al., 2018). In Iran, several studies have shown that consumers are willing to pay more for organic products (Kargar Dehbidi & Ansari Samani, 2020; Pouralijan et al., 2021; Pourmozafar et al., 2015). However, factors such as environmental awareness, income, and education significantly influence WTP for organic food (Shokoohi & Erfanifar, 2024; Zandi Nasab et al., 2020). Trust in organic labels and ease of access are also important determinants of WTP (Pouralijan et al., 2021). International findings suggest that developing the organic market requires promotional and educational initiatives, improved distribution and access, and strengthening consumer trust (Babajani et al., 2023).

A study was conducted to examine the factors influencing organic product consumption among Tehran consumers, with a particular focus on those who shopped at certified organic stores. The study found that income, perceived community identification, product quality perception, and environmental attitudes were the most significant factors affecting purchasing decisions (Zandi Nasab et al., 2020).

A similar finding was reported by Pouralijan et al. (2021) in a study on consumer behavior toward organic oranges. The researchers found that perceived organic attributes had a stronger influence on consumer choices than environmental benefits. These perceptions had a positive and significant impact on consumers' propensity to purchase organic oranges. Rajabi et al. (2013), in their study on consumer acceptance of organic products in Karaj, concluded that overall knowledge and awareness of organic products were moderate, and attitudes were generally favorable. Four key factors were identified as influencing product acceptance: information and education, improved access, product characteristics, and support facilities.

Razeghi et al. (2018) conducted a study among Tehran residents, finding that while knowledge exhibited an inverse relationship with accessibility, variables such as trust, marital status, and gender were positively associated with organic food consumption. However, a notable absence of a substantial correlation was observed between price and the aforementioned outcomes. The study underscored the significance of cultivating consumer trust, fostering distinct brand identities, and enhancing traceability to promote increased consumption of organic products. Lack of effective promotion and the absence of a unique, standardized label in the Iranian market also remain major obstacles that hinder sales potential.

Socioeconomic variables, such as income, education, age, and household size, consistently influence WTP across contexts (Muhammad et al., 2015; Vapa-Tankosić et al., 2018). The impact of family size on WTP is mixed; some studies cite financial constraints (Adekunle et al., 2019; Ahlheim & Schneider, 2013; Muhammad et al., 2015), while others find higher WTP among larger households with a greater focus on food quality (Vapa-Tankosić et al., 2018). Similarly, the presence of children in a household has shown varied effects. Some studies suggest that health- and environment-conscious parents are more willing to pay a premium for eco-labeled products (Freyer & Haberkorn, 2008; Loureiro et al., 2002), while others indicate that financial limitations reduce WTP (Sriwaranun et al., 2015).

Other influential factors include prior organic purchasing behavior, environmental concerns, and socio-attitudinal variables (Baiyegunhi et al., 2018; Sriwaranun et al., 2015). Awareness of health and safety benefits (Çakmakçı & Çakmakçı, 2023), also boosts WTP beyond what demographics alone can explain (Adekunle et al., 2019). However, despite these positive influences, high price premiums continue to be a significant deterrent to broader adoption (Adekunle et al., 2019).

2.2. Barriers to Organic Food Consumption

The higher price of organic products is largely due to lower yields and the absence of synthetic inputs (Gschwandtner, 2018). Many studies have identified high prices, limited availability, and poor label perception as major barriers to organic food consumption (Johnstone & Tan, 2015; Rödiger & Hamm, 2015). Nevertheless, in certain contexts, consumers may still prefer organic food despite these disadvantages (Suciu et al., 2019).

Income level has also been shown to influence organic food expenditure (Carmona et al., 2021; Chowdhury et al., 2021; Pawlewicz, 2020), as have broader socio-demographic variables (Diagourtas et al., 2023; Huo et al., 2023).

In Iran, regional studies have consistently found that consumer attitudes, socioeconomic characteristics, and product attributes, such as branding and pricing, affect purchasing behavior (Andervazh, 2020; Asgharnezhad et al., 2018; Bazhan et al., 2024; Kavoosi Kalashami et al., 2017; Pishbahar et al., 2020; Sharifi et al., 2021; Tohidi et al., 2023). These findings are consistent with global research trends. Lack of certification and labeling undermines consumer trust and reduces WTP, as confirmed by several Iranian studies (Baba Akbari Sari et al., 2009; Haghjou et al., 2013; Khaerolahi et al., 2021; Sayed Saleki et al., 2012). In a survey conducted in Mashhad, inadequate advertising and distrust in certification labels were cited as key challenges in purchasing healthy products (Firoozzare et al., 2024). In this context, government policies and planning could play a pivotal role in overcoming these obstacles (Babajani et al., 2015; Edalati et al., 2020; Shahabi Ahangkolaee & Gorton, 2021).

2.3. Relevant Theoretical Models

Ajzen's theory of planned behavior is widely used to predict consumer intentions in food-related decision-making, including WTP for organic food (Ajzen, 1991; Caliskan et al., 2021; Chiew et al., 2023). According to the theory of planned behavior, behavioral intentions are shaped by attitudes, perceived norms, and perceived behavioral control. Several studies have applied these concepts to consumer WTP for organic products (Pang et al., 2021; Wang et al., 2020).

Positive attitudes toward organic products have been found to predict higher WTP (Bernabéu et al., 2022). Key influencing factors include health concerns, attitudes, subjective norms, knowledge about organic foods, availability, and labeling (Sana et al., 2018). Socioeconomic characteristics, including gender, education level, age, and occupation, have been identified as factors that influence WTP (Tsakiridou et al., 2006; Tung et al., 2012).

However, positive perceptions do not always translate into actual purchases (Bernabéu et al., 2022). For example, even when consumers express concern about pesticide use, inconsistencies in attitudes may still limit buying behavior (Tung et al., 2012). In certain instances, the geographic origin of a product may have a greater influence on consumer preferences than the methods employed during production (Bernabéu et al., 2022).

Food safety, health, and environmental concerns are the main motivations behind interest in organic food (Asioli et al., 2017; Shahabi Ahangarkolaee & Gorton, 2021). Other factors, such as taste, production methods, and the absence of artificial additives, also play significant roles in shaping preferences (Asioli et al., 2017).

Although WTP is often used as a proxy for purchasing intent, it does not always lead to actual purchasing behavior. External barriers, such as budget constraints, limited product availability, and competing consumer priorities, contribute to this gap. Research shows that while attitudes, marketing efforts, and peer influence can increase WTP, real purchases depend on additional factors beyond initial willingness (Caliskan et al., 2021; Pang et al., 2021; Wang et al., 2020). Figure 1 illustrates the conceptual framework of the study based on the influencing factors explained in the literature review.

3. Methodological Approach

The present study employed a combination of qualitative and quantitative approaches. Figure 2 illustrates the research design. Initially, the research group administered two rounds of Delphi questionnaires with Iranian experts to ascertain the primary factors that influence the WTP for organic foods in Iran. In addition, they reviewed the literature to complete the variable list and design the conceptual framework.

An exploratory mixed-methods design was used, integrating literature findings and expert insights through a Delphi process and consumer surveys. In the survey part of this study, we used triangulation to validate our results by combining qualitative and quantitative phases. The qualitative insights on consumer points of view and attitudes toward organic foods in different districts of Tehran complemented the quantitative evidence and increased the credibility and consistency of the conclusions. This alignment serves to enhance our comprehension of the factors that influence consumer behavior, thereby supporting the overall credibility of this research.

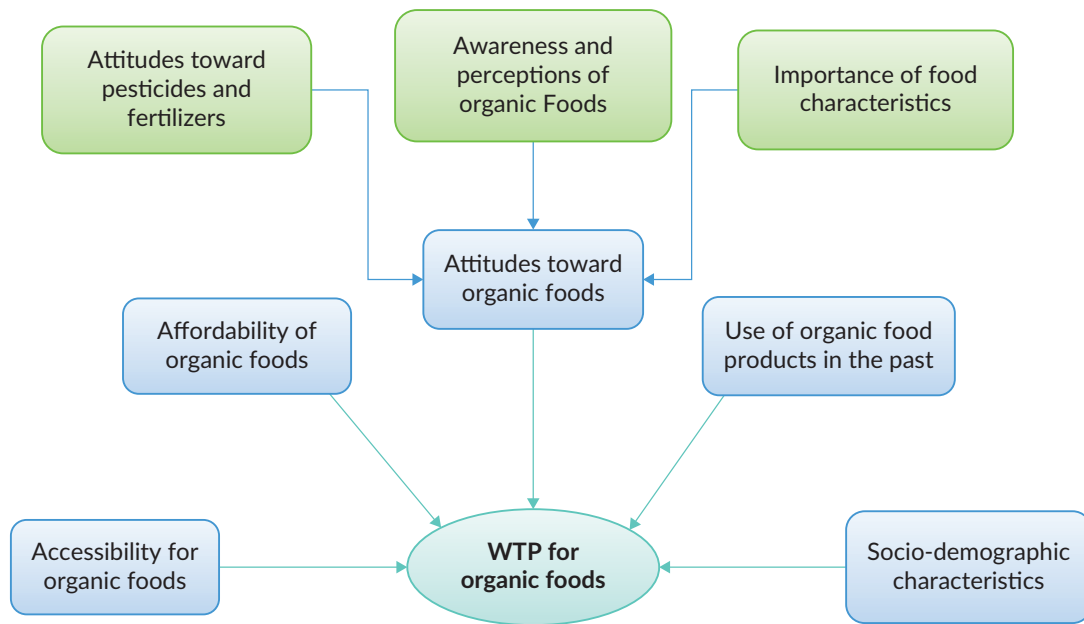


Figure 1. Conceptual framework of factors influencing willingness to pay for organic foods.

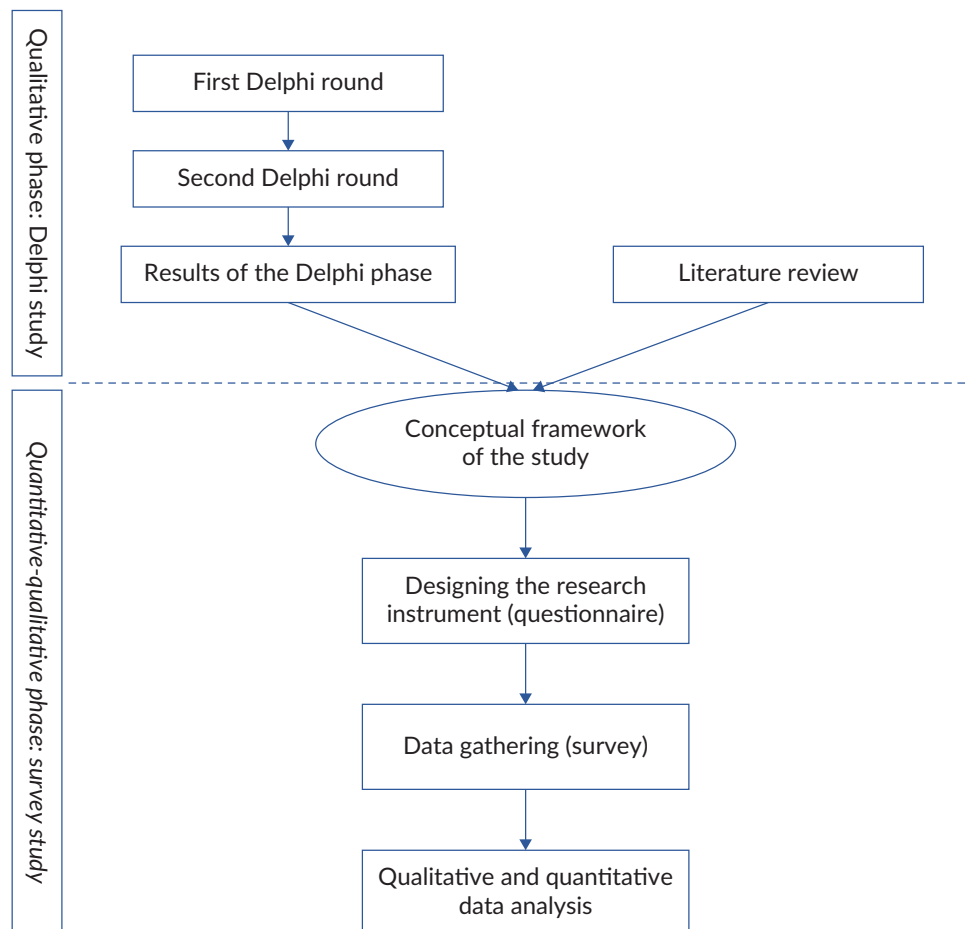


Figure 2. Study design and relations between different parts of the study.

3.1. The Qualitative Delphi Phase

This phase contained two rounds of the Delphi through interviews with 16 experts and scholars from different organizations and universities, as well as relevant ministries, and all of them possess expertise in organic farming development in Iran. The sampling method in this phase of the study was snowball sampling, and the data gathering method was conducted through online interviews using questionnaires. The Delphi panel included 16 experts from academia, government, certification bodies, and organic farming, selected via snowball sampling for their sectoral expertise. The snowball sampling method helped us to identify people with profound knowledge of the organic food sector. Though the number of participants was restricted, the Delphi studies prioritize expert knowledge over sample size, as the main goal is to achieve consensus among specialists. Considering the relatively small organic food sector in Iran, the selected panel effectively represented the main actors involved in the development of organic food in the country.

Experts evaluated the factors derived from existing literature and proposed new factors that influence the development of organic food products. Round 2 utilized a 1–10 scale to finalize these ratings. Participant details are summarized in Appendix 1 (see the Supplementary File).

Based on the literature review and the outcomes of the Delphi interviews, variables used in the survey phase are listed in Appendix 2. See the Supplementary File.

3.2. The Survey Phase of the Research

This phase was addressed by applying a semi-structured questionnaire provided for survey interviews regarding the research questions. The questionnaire was divided into two sections. In the initial section, we presented a series of open-ended inquiries to encourage respondents to provide concise and direct responses. The data from this section was analyzed using SPSS 27. The second part of the questionnaire contained open-ended questions designed to elicit the participants' views on the challenges and solutions to developing organic food in Iran. The present study utilizes the MAXQDA software to systematically analyze the qualitative survey data, with a focus on identifying recurrent themes and categories pertaining to the challenges and solutions associated with organic agriculture in Tehran. Thematic coding was employed to categorize the responses, which were grouped into the following major categories: awareness and education, production and distribution, government and institutional support, economic barriers, and cultural attitudes. Within each category, sub-themes were developed to capture the nuances of the data.

3.2.1. The Sampling Method and Data Gathering of the Second Section

A convenience sampling method was employed to recruit consumers in Tehran's fruit and vegetable markets, an approach deemed suitable for the study's mixed-methods design (Etikan et al., 2016). Convenience sampling, as defined by Etikan et al. (2016), guided the sampling method in the present study. This approach entailed the recruitment of respondents on a voluntary basis from fruit and vegetable markets in Tehran, who then participated in the survey during designated data collection periods. Consumer survey data have been collected in September and October 2024, thereby ensuring that the results reflect the most current consumer attitudes and market conditions at the time of the study. To capture socioeconomic diversity, we used a stratified convenience sampling across Tehran's districts, grouped into five welfare levels adapted from Kamal et al. (2019). See Appendix 3 in the Supplementary File.

The geographical location of Tehran and its municipal districts is illustrated in Figure 3. As illustrated in this figure, most of the population is concentrated in the eastern and southern regions of Tehran, where a greater proportion of interviews were conducted for our survey.

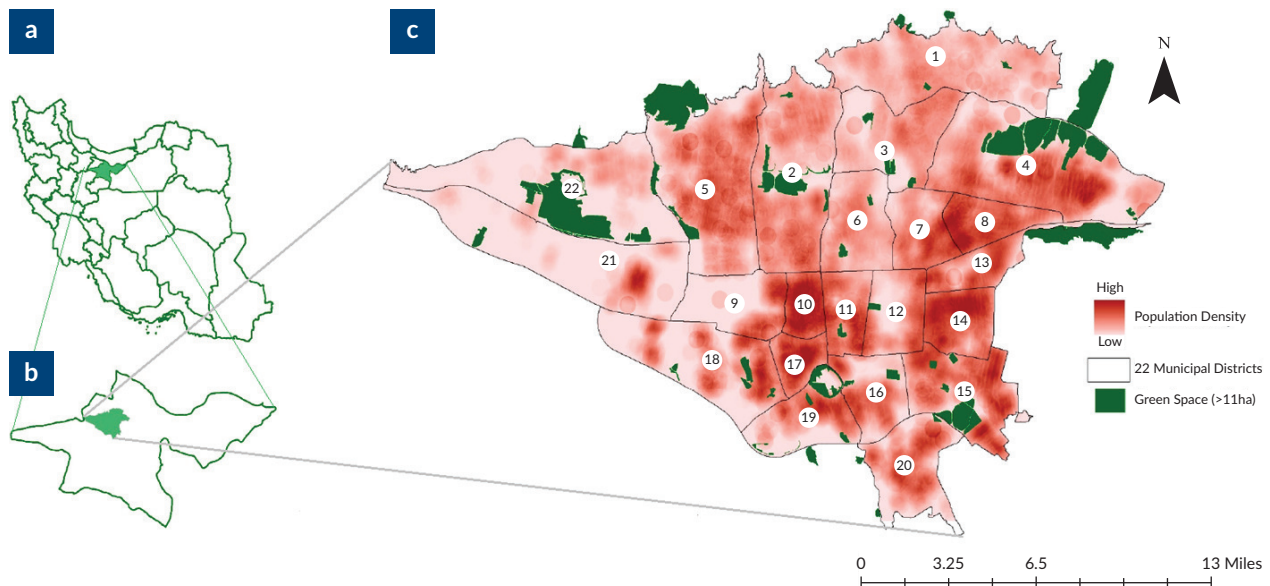


Figure 3. (a) Tehran province location in Iran; (b) Tehran city location; and (c) population density. Note: This figure was adapted from Alavi et al. (2024) and has undergone slight alterations.

4. Results and Discussion

The objective of this section is to provide a comprehensive description of the demographic and attitudinal characteristics of the sample regarding organic food, along with the prediction model of WTP. To this end, stepwise regression analysis will be employed in SPSS 27, leveraging a range of personal, perceptual, and attitudinal variables.

4.1. Descriptive Statistics

4.1.1. The Socio-Demographic Characteristics of Respondents

The sample ($N = 214$) consisted predominantly of males (60.6%), with a significant majority of respondents under the age of 35 and possessing a high school diploma or a bachelor's degree. The distribution of income levels exhibited a bias towards the Median, with most households comprising four to six individuals (see Appendix 4 in the Supplementary File for further details).

4.1.2. Importance of Food Characteristics From the Respondents' Views

According to the respondents (Table 1), the attribute of food appearance was identified as the most important, with a mean value of 3.27 on a scale of 0 to 4. In contrast, the attribute of production location was identified as the least important, with a mean value of 2.54 on the same scale.

Table 1. Importance of food characteristics (Likert spectrum 0 = *No importance* to 4 = *Very Important*).

Food characteristics	N	M	Standard deviation
Appearance of food (taste, smell, color, and freshness)	214	3.27	1.114
Place of production	212	2.54	1.432
Price	214	2.71	1.253
Easy access	213	2.72	1.188
Ingredients (Fat, Sugar, Salt, etc.)	214	2.70	1.379
Artificial colors, preservatives, and residual chemicals	214	2.84	1.376

4.1.3. The Respondents' Understanding and Attitudes Toward Organic Fruits and Vegetables

As demonstrated in the literature review, studies have shown that individuals with a deeper understanding of the environmental and health benefits of organic products are more likely to recognize their value and justify the higher cost (Etuah et al., 2022; Haghjou et al., 2013). Approximately 50% of the sample exhibited a low level of familiarity with organic production, with a minority of 3.7% demonstrating a high degree of understanding. (Table 2).

Table 2. The understanding of organic fruits and vegetables among respondents.

	Frequency	Valid percentage	Cumulative percentage
No knowledge	6	2.8%	2.8%
Low knowledge	98	45.8%	48.6%
Moderate knowledge	102	47.7%	96.3%
High knowledge	8	3.7%	100%
Total	214	100%	

Table 3 shows that most respondents (52.8%) held negative views toward pesticides, while only 16.8% viewed them favorably.

Table 3. The attitudes of respondents toward pesticides and agrochemicals.

Attitudes	Frequency	Valid percentage	Cumulative percentage
Positive attitude	36	16.8%	16.8%
Moderate attitude	65	30.4%	47.2%
Negative attitude	113	52.8%	100%
Total	214	100%	

Attitudes toward organic products were predominantly favorable, with 75.7% of respondents expressing positive sentiments (see Table 4). The survey results indicate a notable level of support for organic products among the surveyed population.

Table 4. Attitudes toward organic fruits and vegetables.

Attitude	Frequency	Valid percentage	Cumulative percentage
Negative	14	6.5%	6.5%
Moderate	38	17.8%	24.3%
Positive	162	75.7%	100%
Total	214	100	

4.1.4. WTP for Organic Fruits and Vegetables

The results of the quantitative part of the survey on respondents' WTP for organic fruit and vegetables (Table 5) show a wide range of responses. Respondents were generally willing to pay modest premiums: 60% were willing to pay 1–20% more. Only 3.3% were unwilling to pay any premium. The findings of this study indicate that while a considerable number of consumers exhibit a propensity to procure organic products at a premium price, their inclination to do so is, in general, within a moderate range.

Table 5. Respondents' WTP for a higher price for organic food.

Higher cost percentage	Frequency	Percentage	Valid percentage	Cumulative percentage
0%	7	3.3%	3.3%	3.3%
1–10%	63	29.4%	29.4%	32.7%
11–20%	64	29.9%	29.9%	62.6%
21–50%	41	19.2%	19.2%	81.8%
51–70%	12	5.6%	5.6%	87.4%
71–100%	17	7.9%	7.9%	95.3%
More than 100%	10	4.7%	4.7%	100%
Total	214	100%	100%	

4.2. Quantitative Analysis: Regression Model

Multiple regression is a statistical method that involves the use of a group of independent variables to predict a dependent variable within a statistical model. In this study, a stepwise multiple regression analysis was performed in SPSS 27 to predict respondents' willingness to pay (WTP) for organic products based on several variables (predictors). The dependent variable in this study was WTP for organic fruit and vegetables, as determined by the survey results. In the final stage of the analysis, seven predictor variables were entered into forward steps, including attitude towards pesticides, belief that organic food is expensive, trust in authorities and conventional farmers, attitude towards organic fruit and vegetables, availability of organic food, household income, and age. In regard to the method of entering the variables, the regression analysis was executed in seven steps. The final regression model (Model 7) explained 61.1% of the variance in WTP (Table 6).

Table 6. The regression model summary.

Model	R	R square	Adjusted R square	Standard error of the estimate	Durbin-Watson
1	0.640	0.410	0.405	1.193	
2	0.686	0.471	0.462	1.134	
3	0.717	0.513	0.501	1.092	
4	0.737	0.543	0.528	1.062	
5	0.755	0.570	0.552	1.035	
6	0.771	0.594	0.573	1.010	
7	0.781	0.611	0.587	0.994	2.200

This finding suggests that the variables entered the model, or, in other words, the predictors, collectively exerted a significant influence on the WTP of the respondents in the present study. While the previous analysis focused on the value and direction of the coefficients, the statistical significance of each independent variable in the final regression model is critical and determines the final regression model (Model 7; Table 7). The *p*-values of each coefficient provide evidence that the observed relationships between the independent variables and the dependent variable, in this case, WTP, are real effects or due to chance. In this model, statistical significance was assessed using an alpha level of 0.05.

Table 7. Regression coefficients and significance for the final model (Model 7).

Variable	Coefficient (B)	Standard error	t-statistic	p-value (Significance)
Constant	−1.860	0.987	−1.884	0.062
Attitude towards pesticides and agrochemicals (X1)	0.521	0.065	7.987	<0.001
Perception that organic products are too expensive (X2)	−0.658	0.154	−4.267	<0.001
Trust in authorities and conventional farmers regarding food safety (X3)	−0.402	0.090	−4.450	<0.001
Attitude towards organic fruit and vegetables (X4)	0.211	0.055	3.838	<0.001
Availability of organic produce (X5)	0.338	0.113	2.991	0.003
Household's income (X6)	0.179	0.068	2.650	0.009
Age (X7)	−0.014	0.007	−2.187	0.031

As shown in Table 7, the following seven independent variables were statistically significant ($p < 0.05$) in the final regression model:

1. Attitude towards pesticides: Negative attitudes towards pesticides were strongly related to higher WTP for organic products.
2. Belief that organic food is too expensive: This negative relationship suggests that respondents who considered organic food too expensive were less willing to pay a premium.
3. Trust in authorities and conventional farmers: Higher trust in conventional production systems was negatively related to WTP.
4. Attitudes towards organic produce: Positive attitudes towards organic produce significantly predicted higher WTP.

5. Availability of organic food: The perception that organic food is available in sufficient quantities positively affected WTP.
6. Household income: Higher household income was positively associated with WTP.
- 7 Age: Older respondents were less willing to pay a premium for organic products.

Based on the regression results, the regression equation model can be written as follows:

$$Y = -1.860 + (0.521) X1 - (0.658) X2 - (0.402) X3 + (0.211) X4 + (0.338) X5 + (0.179) X6 - (0.014) X7$$

In which: Y = WTP; X1 = attitude towards pesticides and agrochemicals; X2 = perception that organic products are too expensive; X3 = trust in authorities and conventional farmers regarding food safety; X4 = attitude towards organic fruit and vegetables; X5 = availability of organic produce; X6 = household income; and X7 = age.

Table 6 shows that the final model explained 61.1% of WTP variance (Adjusted $R^2 = 0.587$), with no multicollinearity or autocorrelation concerns (Durbin-Watson = 2.2). The residuals, with an M near zero, were normally distributed.

WTP increased with negative attitudes toward pesticides, higher trust in organic produce, better availability, and higher income; and decreased with stronger trust in conventional systems and older age.

4.3. Qualitative Analysis

As outlined in the methodology (Section 3.2), the consumer survey included open-ended questions designed to explore the issues and possible ways forward in the development of organic food in Tehran from the consumer's perspective. A thematic analysis of the qualitative responses was conducted using MAXQDA, resulting in five overarching themes. These qualitative findings enrich and contextualize the research and serve to complement, confirm, and triangulate with the quantitative findings in Sections 4.1 and 4.2. In this section, the responses from participants are presented with their unique respondent identifiers (e.g., R23, indicating Respondent 23) to maintain anonymity while allowing for traceability.

4.3.1. Need for More Public Education and Knowledge

A key qualitative finding was a lack of public awareness and understanding of organic products. The respondents (e.g., R20, R36, R200, R91, and R180) expressed a desire for targeted educational campaigns via television and social media. These campaigns would aim to address the confusion surrounding the differences between organic and conventional products. This aligns with quantitative results that show nearly half of the respondents had "low" or "moderate" knowledge (Table 2). Suggestions included integrating organic farming education into schools and agricultural programs (e.g., R38 and R44) to foster long-term cultural change. This knowledge gap helps explain generally positive attitudes toward organic products (Table 4) that do not always translate into higher WTP (Table 5), as consumers often lack specific information to fully value the premium.

4.3.2. Major Challenges Related to Supply, Distribution, and Access

A major concern among participants was the limited supply and access to organic produce, validating its significant positive prediction of WTP (X5; Table 7, $p = 0.003$). Consumers desired increased organic production, noting farmer challenges like high input costs (e.g., R32, R49, R50, R159, and R161). Finding organic options was difficult, especially for urban shoppers, correlating with “ease of access” (Table 1, $M = 2.72$). Suggestions for improvement included increased retailing in various markets (e.g., R6, R26, R39, and R131) and farmer-to-consumer delivery to reduce costs and build trust (e.g., R59, R98, and R164).

4.3.3. Expectations for the Role of Government and Institutional Support

Respondents expressed a strong desire for increased government involvement in the organic sector, particularly in regulating and monitoring organic practices. This finding provides support for the hypothesis that there is a significant negative relationship between trust in government and conventional farmers, and WTP (see Table 7, $p < 0.001$). The results of this study indicate that consumers may select organic options due to their mistrust of conventional food oversight. Participants specifically called for stricter regulation of organic labels, pesticide use, and clearer definitions of organic farming (e.g., R9, R88, and R172). As R89 noted: “The government...should regulate the chemicals and pesticides...and organic products should be registered.” This aligns with the broader negative perception of pesticides (Table 3, 52.8% negative attitude). Additional suggestions included subsidies for organic conversion (e.g., R113, R170, and R202) and funding for organic research, with support for agencies like the Ministry of Health and Agricultural Jihad indicating a demand for a credible national organic system.

4.3.4. Widespread Economic Constraints to Consumption

The high cost of organic food emerged as a predominant concern in the qualitative responses, corroborating the regression findings where the statement “organic food is too expensive” (X2) exhibited a negative predictive value on WTP (Table 7, $p < 0.001$). Conversely, higher household income (X6) was identified as a positive predictor ($p = 0.009$). Respondents frequently cited cost as the primary factor influencing their preferences for organic food (e.g., R12, R18, and R165). They proposed strategies to reduce prices, such as price reductions or subsidies for consumers. This economic barrier aligns with WTP patterns in Table 5, where the majority of respondents indicated a willingness to pay only moderate or low premiums (1–20%), and with the moderate importance of price in Table 1 ($M = 2.71$). While many consumers were motivated by concerns regarding their health and the environment, premium prices resulted in limited purchasing power, particularly among lower-income groups.

4.3.5. Lack of Consumer Confidence in Authenticity

A key concern in the qualitative data was trust in the legitimacy of organic labels. Respondents questioned whether labeled products truly met organic standards, often citing doubts about producers or the label itself (e.g., R27, R58, and R117). This skepticism may explain why, despite generally favorable attitudes toward organic produce (X4; Table 4, 75.7%) and its significant predictive value for WTP (Table 7, $p < 0.001$), uncertainty about authenticity limits purchase intent. Mistrust may also contribute to the lower importance of “place of production” (Table 1, $M = 2.54$), as original labels are not always trusted. Some favored locally

grown organics, possibly due to greater transparency or shorter supply chains (e.g., R35 and R121). These findings underscore the need for credible, verifiable certification and labeling systems to build trust and support market growth.

5. Discussion

The findings of this study highlight the complex interplay of perceptual, structural, and contextual factors influencing Iranian consumers' WTP for organic fruit and vegetables. Appearance and food safety emerged as top priorities in consumer decision-making, consistent with previous studies (Paul & Rana, 2012; Rödiger & Hamm, 2015). The emphasis on visual cues and sensory appeal indicates that immediate quality assessments remain central to purchasing behavior. Conversely, the relatively low importance attributed to the concept of "place of production" may be indicative of limited awareness or skepticism towards local or regional sourcing, a pattern that has been previously documented in the research conducted by Khaerolahi et al. (2021). Marketing efforts aimed at promoting organic and local food would benefit from aligning with these dominant consumer heuristics. A substantial knowledge gap regarding organic food remains, particularly among lower-income consumers, thereby corroborating the findings of Rajabi et al. (2013) and Razeghi et al. (2018). The stratified sampling design employed in this study enabled the identification of socioeconomic disparities. This pervasive dearth of knowledge hinders the expansion of the organic market and underscores the necessity for more precise labeling and targeted educational initiatives. The present study draws on the theory of planned behavior (Ajzen, 1991; Wang et al., 2020) to argue that enhancing consumer understanding can shape attitudes and increase WTP. The study confirms that public concern about chemical inputs, especially pesticides, drives interest in organic alternatives, echoing prior research (Ghali-Zinoubi & Toukabri, 2019; Paul & Rana, 2012). Strong negative attitudes toward conventional farming were evident, but not universal—some consumers still prioritize cost or consider agrochemicals a necessary part of food production. This variability suggests targeted messaging is needed to emphasize health and environmental risks and to encourage organic consumption through mass media and public outreach.

While positive attitudes toward organic food were pervasive, aligning with literature on health and environmental motivations (Ghali-Zinoubi & Toukabri, 2019; Thøgersen, 2016), structural barriers such as high prices and limited access constrained behavior. While a considerable proportion of respondents indicated a willingness to pay (WTP) a 1–20% premium, aligning with the findings reported by Hansen et al. (2018), only a limited number were willing to incur costs beyond 50%, a finding consistent with the observations made by Johnstone and Tan (2015). The cost of the technology is a significant impediment to its more widespread use. These findings underscore the necessity for economic policies such as consumer subsidies, producer incentives, or price stabilization to foster market development (Gschwandtner, 2018). The quantitative predictors of WTP—namely, pesticide concerns (X1), perceived cost (X2), trust in conventional systems (X3), organic attitudes (X4), availability (X5), income (X6), and age (X7)—were all statistically significant and reinforced by qualitative findings. Consumer interviews yielded substantial contextual information. A recurring theme in these interviews was deep-seated mistrust in labeling and certification (X3 and X4). This mistrust was observed even among consumers who held favorable views of organic products. This mistrust has the potential to compromise the efficacy of organic labeling, a factor that may contribute to the observed lack of significance of the "place of production" attribute in consumer purchasing decisions. A subset of respondents expressed a preference for locally sourced organic products, indicating that shorter supply chains may contribute to enhanced trust. Perceived affordability and limited

availability emerged as real-world constraints on organic purchasing. These qualitative insights explain the negative effect of cost perceptions (X2) and the positive impact of availability (X5) on WTP. Similarly, age and income trends—higher WTP among younger and wealthier respondents—mirrors previous research (Aschemann-Witzel & Zielke, 2017; Gracia & de Magistris, 2008). Importantly, trust in conventional systems reduced WTP for organic products (Vermeir & Verbeke, 2008), suggesting that consumers who trust mainstream oversight see less need for organic alternatives.

Blending qualitative and quantitative approaches not only validated the key statistical predictors but also illuminated the nuanced mechanisms behind them. For example, concerns about pesticide residues (X1) were more than a preference—they were often described as deeply rooted fears shaped by health anxieties and limited regulatory trust. Similarly, the influence of trust (X3 and X4) on WTP became clearer through narratives expressing skepticism about certification, governance, and transparency. The qualitative data also highlighted strong consumer demand for improved regulation, credible certification, and education, indicating where policy interventions might be most effective.

In addition to confirming quantitative patterns, the interviews revealed systemic barriers and actionable entry points for policy. Calls for better labeling, more visible certification, and expanded consumer education were frequent. Economic concerns remained dominant, reinforcing the need for retail expansion and government-supported affordability measures. Increasing transparency in production, shortening supply chains, and promoting local organic farming could improve both consumer trust and market penetration.

In sum, the integration of qualitative insights strengthened the interpretive validity of this study. It demonstrated how structural conditions (e.g., cost and access), perceptual variables (e.g., trust and knowledge), and demographic factors interact to shape organic food consumption. Future efforts to grow Iran's organic market must address affordability, labeling credibility, and education simultaneously. Additionally, community-based models like urban gardening and cooperative farming offer promising avenues to enhance access and rebuild trust from the ground up.

6. Conclusion

This study examined the demand-side dynamics of organic fruit and vegetable consumption in Tehran, offering empirical insights into consumer behavior within the context of sustainable urban food systems. A mixed-methods approach was employed to identify the key determinants of WTP, including pesticide concerns, perceived costs, trust in conventional systems, attitudes toward organic food, availability, income, and age. The qualitative findings corroborated these results, unveiling structural barriers—including limited affordability, access, and consumer trust—alongside potential interventions related to education, infrastructure, and regulatory transparency. These findings are directly relevant to urban planning, particularly as cities seek to develop more sustainable and equitable food environments. Spatial access emerged as a critical factor, underscoring the necessity for planners to address geographic disparities in food availability through zoning, networked distribution systems, and proximity-based retail interventions. The practice of urban agriculture, both within and surrounding city boundaries, ought to be endorsed through the implementation of land-use protections and the incorporation into broader food logistics frameworks. The incorporation of organic food systems into spatial planning and infrastructure investment has the potential to enhance both environmental sustainability and public health outcomes. Achieving

alignment between consumer behavior and sustainability objectives necessitates a concerted effort across the domains of planning, policy, and market. The barriers identified—cost, access, awareness, and trust—represent key leverage points for planners and policymakers to influence food system transitions. This study underscores the necessity for cross-sectoral planning that considers food not only as a health or agricultural issue, but also as a spatial and infrastructural one, central to sustainable urban development. The following planning strategies are recommended:

- Implementing spatially equitable subsidies or pricing mechanisms to improve affordability across income groups.
- Supporting local food networks—such as farmers' markets, community-supported agriculture, and neighborhood food hubs—to reduce food miles and increase trust.
- Enhancing regulatory systems with transparent organic certification to rebuild consumer confidence.
- Investing in infrastructure for low-carbon, efficient food logistics, and last-mile delivery.
- Embedding sustainable food systems within urban planning curricula, master plans, and resilience strategies.
- Fostering cross-sector partnerships that address spatial and economic exclusion in urban food access.

While the study provides important insights, its findings are limited to Tehran and rely on self-reported data. Future research should incorporate spatially explicit analyses of WTP and food accessibility across urban sub-regions to guide geographically targeted interventions. Longitudinal studies tracking the effects of planning or policy changes on consumer behavior would further strengthen this emerging field. Comparative research across diverse urban contexts could also yield transferable lessons for sustainable food planning globally.

Ultimately, cultivating a robust organic food market in Tehran is not merely a matter of individual choice; it is a complex urban planning challenge. Addressing the intertwined economic, spatial, and informational barriers to sustainable consumption requires integrated strategies. By leveraging planning tools to make sustainable food more accessible, affordable, and trusted, cities can align food policy with broader goals of equity, resilience, and environmental sustainability.

Acknowledgments

We would like to express our gratitude to all participants in the interviews for their valuable contributions. Special thanks go to the data collection team, including Firoozeh Veisi, Amir, and Ali Babajani, for their dedicated efforts.

Conflict of Interests

The authors declare no conflict of interests.

Data Availability

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

LLMs Disclosure

The authors acknowledge the use of AI tools, including DeepL and ChatGPT, for assisting with the editing process of this manuscript.

Supplementary Material

Supplementary material for this article is available online in the format provided by the authors (unedited).

References

- Adekunle, C. P., Oyekale, T. O., & Oladeji, S. O. (2019). Socio-economic factors influencing consumers' willingness to pay for organic products in Abeokuta, Southwest Nigeria. *Journal of Agripreneurship and Sustainable Development*, 2(2), 89–101.
- Ahlheim, M., & Schneider, F. (2013). *Considering household size in contingent valuation studies* (No. 68). Center for Research on Innovation and Services. <https://ideas.repec.org/p/zbw/fziddp/682013.html>
- Ahmad, S. N. B., Juhdi, N., & Jaya, K. (2010). Organic food: A study on demographic characteristics and factors influencing purchase intentions among consumers in Klang Valley, Malaysia. *International Journal of Business and Management*, 5(2), 105–118. <https://doi.org/10.5539/ijbm.v5n2p105>
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211.
- Alam, M. A. (2024). Consumer awareness and perceptions of pesticide residues in vegetables in Bangladesh. *Research in Agriculture Livestock and Fisheries*, 11(1), 25–33.
- Alavi, S. A., Esfandi, S., Khavarian-Garmsir, A. R., Tayebi, S., Shamsipour, A., & Sharifi, A. (2024). Assessing the connectivity of urban green spaces for enhanced environmental justice and ecosystem service flow: A study of Tehran using graph theory and least-cost analysis. *Urban Science*, 8(1), Article 14. <https://doi.org/10.3390/urbansci8010014>
- Alizadeh, A., Javanmardi, J., Abdollahzadeh, N., & Liaghat, Z. (2008, June 16–20). *Consumers' awareness, demands and preferences for organic vegetables: A survey study in Shiraz, Iran* [Paper presentation]. 16th IFOAM Organic World Congress, Modena, Italy.
- Andervazh, L. (2020). Studying the factors affecting the attitude and intention of buying organic food consumers: Structural equation model. *Iranian Journal of Health Education and Health Promotion*, 8(1), 35–44.
- Aschemann-Witzel, J., & Zielke, S. (2017). Can't buy me green? A review of consumer perceptions of and behavior toward the price of organic food. *Journal of Consumer Affairs*, 51(1), 211–251.
- Asgharnezhad, B., Salati, F., & Ghaffari, M. (2018). *Factors affecting intention to purchase organic food products among Iranian consumers*. *Academy of Marketing Studies Journal*, 22(3), 1–23.
- Asioli, D., Aschemann-Witzel, J., Caputo, V., Vecchio, R., Annunziata, A., Næs, T., & Varela, P. (2017). Making sense of the “clean label” trends: A review of consumer food choice behavior and discussion of industry implications. *Food Research International*, 99, 58–71. <https://doi.org/10.1016/j.foodres.2017.07.022>
- Baba Akbari Sari, M., Asadi, A., Akbari, M., Fakher Zadeh, S. A., & Sookhtanloo, M. (2008). An investigation of the consumer attitude and effective factors in adoption of agricultural organic products. *Iranian Journal of Agricultural Economics and Development Research*, 39(1), 133–144.
- Babajani, A., Muehlberger, S., Feuerbacher, A., & Wieck, C. (2023). Drivers and challenges of large-scale conversion policies to organic and agrochemical-free agriculture in South Asia. *International Journal of Agricultural Sustainability*, 21(1), Article 2262372. <https://doi.org/10.1080/14735903.2023.2262372>
- Babajani, A., Shabanali Fami, H., Asadi, A., & Rezapanah, M. Z. (2015). Explain the driving policy instruments

- of organic farming development in Iran. *Iranian Journal of Agricultural Economics and Development Research*, 46(2), 267–276.
- Baiyegunhi, L. J., Mashabane, S. E., & Sambo, N. C. (2018). Influence of socio-psychological factors on consumer WTP for organic food products. *Journal of Economics and Behavioral Studies*, 10(5), 208–219.
- Bazhan, M., Shafiei Sabet, F., & Borumandnia, N. (2023). Development and validation of a questionnaire to examine determinants of consumer intentions to purchase organic food. *BMC Nutrition*, 9, Article 74. <https://doi.org/10.1186/s40795-023-00731-y>
- Bazhan, M., Shafiei Sabet, F., & Borumandnia, N. (2024). Factors affecting purchase intention of organic food products: Evidence from a developing nation context. *Food Science & Nutrition*, 12(5), 3469–3482.
- Bazoche, P., Combris, P., Giraud-Héraud, E., Seabra Pinto, A., Bunte, F., & Tsakiridou, E. (2014). Willingness to pay for pesticide reduction in the EU: Nothing but organic? *European Review of Agricultural Economics*, 41(1), 87–109.
- Bernabéu, R., Nieto, R., & Rabadán, A. (2022). Effect of self-reported attitudes toward organic foods in consumer preferences and willingness to pay. *Renewable Agriculture and Food Systems*, 37(4), 360–368.
- Çakmakçı, S., & Çakmakçı, R. (2023). Quality and nutritional parameters of food in agri-food production systems. *Foods*, 12(2), Article 351. <https://doi.org/10.3390/foods12020351>
- Caliskan, A., Celebi, D., & Pirnar, I. (2021). Determinants of organic wine consumption behavior from the perspective of the theory of planned behavior. *International Journal of Wine Business Research*, 33(3), 360–376.
- Canova, L., Bobbio, A., & Manganelli, A. M. (2020). Buying organic food products: The role of trust in the theory of planned behavior. *Frontiers in Psychology*, 11, Article 575820. <https://doi.org/10.3389/fpsyg.2020.575820>
- Carmona, I., Griffith, D. M., & Aguirre, I. (2021). Understanding the factors limiting organic consumption: The effect of marketing channel on produce price, availability, and price fairness. *Organic Agriculture*, 11, 89–103.
- Chiew, D. K. Y., Zainal, D., & Sultana, S. (2023). Understanding organic food purchase behavior: Using the extended theory of planned behavior. *International Journal of Business Innovation and Research*, 31(2), 268–294.
- Chowdhury, S., Meero, A., Rahman, A. A. A., Islam, K. A., Zayed, N. M., & Hasan, K. R. (2021). An empirical study on the factors affecting organic food purchasing behavior in Bangladesh: Analyzing a few factors. *Academy of Strategic Management Journal*, 20(4). <https://www.abacademies.org/articles/an-empirical-study-on-the-factors-affecting-organic-food-purchasing-behavior-in-bangladesh-analyzing-a-few-factors-11136.html>
- Diagourtas, G., Kounetas, K. E., & Simaki, V. (2023). Consumer attitudes and sociodemographic profiles in purchasing organic food products: Evidence from a Greek and Swedish survey. *British Food Journal*, 125(7), 2407–2423.
- Edalati, S., Omidvar, N., Haghighian Roudsari, A., Ghodsi, D., & Zargaraan, A. (2020). Development and implementation of nutrition labelling in Iran: A retrospective policy analysis. *The International Journal of Health Planning and Management*, 35(1), e28–e44. <https://doi.org/10.1002/hpm.2924>
- Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, 5(1), 1–4. <https://doi.org/10.11648/j.ajtas.20160501.11>
- Etuah, S., Adams, F., Mensah, J. O., Amoah Osei, A. A., Atta Danso, K., & Kwame Frimpong, R. (2022). Assessing consumer awareness, perception, and willingness to pay a premium for certified organic vegetables. *International Journal of Vegetable Science*, 28(4), 374–383.

- Fathia, Q. N., Nurmalina, R., & Simanjuntak, M. (2018). Consumer's attitude and willingness to pay for organic rice. *Indonesian Journal of Business and Entrepreneurship*, 4(1), Article 11. <https://doi.org/10.17358/ijbe.4.1.11>
- Firoozzare, A., Boccia, F., Yousefian, N., Ghazanfari, S., & Pakook, S. (2024). Understanding the role of awareness and trust in consumer purchase decisions for healthy food and products. *Food Quality and Preference*, 121, Article 105275. <https://doi.org/10.1016/j.foodqual.2024.105275>
- Fraj, E., & Martinez, E. (2006). Environmental values and lifestyles as determining factors of ecological consumer behavior: An empirical analysis. *Journal of Consumer Marketing*, 23(3), 133–144.
- Freyer, B., & Haberkorn, A. (2008, June 18–20). *Influence of young children (3–6 years) on organic food consumption in their families* [Paper presentation]. 16th IFOAM Organic World Congress in Cooperation with the International Federation of Organic Agriculture Movements, Modena, Italy. <https://orgprints.org/id/eprint/12130>
- Ghali-Zinoubi, Z., & Toukabri, M. (2019). The antecedents of the consumer purchase intention: Sensitivity to price and involvement in organic product: Moderating role of product regional identity. *Trends in Food Science & Technology*, 90, 175–179. <https://doi.org/10.1016/j.tifs.2019.02.028>
- Ghazanfari, S., Firoozzare, A., Covino, D., Boccia, F., & Palmieri, N. (2024). Exploring factors influencing consumers' willingness to pay healthy-labeled foods at a premium price. *Sustainability*, 16(16), Article 6895. <https://www.mdpi.com/2071-1050/16/16/6895>
- Ghofrani, Y. R., Taleghani, M., & Chirani, E. (2017). Organic agriculture: Food for future green consumers in Iran. *International Journal of Agricultural Management and Development*, 7(2), 179–189.
- Gracia, A., & de Magistris, T. (2008). The demand for organic foods in the South of Italy: A discrete choice model. *Food Policy*, 33(5), 386–396. <https://doi.org/10.1016/j.foodpol.2007.12.002>
- Grunert, K. G., Hieke, S., & Wills, J. (2014). Sustainability labels on food products: Consumer motivation, understanding and use. *Food Policy*, 44, 177–189. <https://doi.org/10.1016/j.foodpol.2013.12.001>
- Gschwandtner, A. (2018). The organic food premium: A local assessment in the UK. *International Journal of the Economics of Business*, 25(2), 313–338.
- Haghjou, M., Hayati, B., Pishbahar, E., Mohammadrezaei, R., & Dashti, G. (2013). Factors affecting consumers' potential willingness to pay for organic food products in Iran: Case study of Tabriz. *Journal of Agricultural Science and Technology*, 15, 191–202.
- Hansen, T., Sørensen, M. I., & Eriksen, M. L. R. (2018). How the interplay between consumer motivations and values influences organic food identity and behavior? *Food Policy*, 74, 39–52. <https://doi.org/10.1016/j.foodpol.2017.11.003>
- He, Z. (2020). Organic animal farming and comparative studies of conventional and organic manures. In H. M. Waldrip, P. H. Pagliari, & Z. He (Eds.), *Animal manure: production, characteristics, environmental concerns, and management* (Vol. 67, pp. 165–182). American Society of Agronomy. <https://doi.org/10.2134/aspectpub67.c9>
- Huo, H., Ahmad, F. S., & Teoh, B. (2023). Factors affecting consumers' organic food purchase behavior: A systematic literature review and future research agenda. *Environment and Social Psychology*, 9(2). <https://doi.org/10.54517/esp.v9i2.1892>
- Jánská, M., Kollar, P., & Celer, Č. (2020). Factors influencing purchases of organic food. *Zagreb International Review of Economics & Business*, 23(1), 81–94.
- Johnstone, M. L., & Tan, L. P. (2015). Exploring the gap between consumers' green rhetoric and purchasing behavior. *Journal of Business Ethics*, 132, 311–328. <https://doi.org/10.1007/s10551-014-2316-3>
- Kamal, S. H. M., Harouni, G. G., & Basakha, M. (2019). Spatial pattern of well-being in Tehran: The north-south gap. *Medical Journal of the Islamic Republic of Iran*, 33, Article 112. <https://doi.org/10.34171/mjiri.33.112>

- Kargar Dehbidi, N., & Ansari Samani, H. (2020). Evaluating the factors affecting the consumption of Shiraz consumers to benefit from organic tomato product: Application of Hackman two-step method. *Journal of Environmental Science and Technology*, 22(7), 43–56.
- Kavoosi Kalashami, M., Sadeghpour, H., Allahyari, M. S., Surujlal, J., & Ghorbandoust, M. (2017). Evaluation of urban consumer willingness to pay for organic leafy vegetables. *International Journal of Vegetable Science*, 23(3), 195–206.
- Khaerolahi, H., Aali, S., & Taghizadeh, H. (2021). Designing a model for improving the attitude of customers of organic food products in Iran. *Consumer Behavior Studies*, 8(2), 176–199.
- Khangan, M. (2020). Organic food and beverages market size to reach USD 620.00 billion by 2026, globally. *Food & Beverages*, 1–220. <https://orgprints.org/id/eprint/38396>
- Koocheki, A., & Ghorbani, R. (2005). Traditional agriculture in Iran and development challenges for organic agriculture. *The International Journal of Biodiversity Science and Management*, 1(1), 52–57. <https://doi.org/10.1080/17451590509618079>
- Loureiro, M. L., McCluskey, J. J., & Mittelhammer, R. C. (2002). Will consumers pay a premium for eco-labeled apples? *Journal of Consumer Affairs*, 36(2), 203–219.
- Mahdavi, H., Allahyari, M. S., Damalas, C. A., & Dunn, E. S. (2020). Drivers and barriers for organic rice (*Oryza sativa* L.) production in northern Iran: experts' consensus using the Delphi method. *Biological Agriculture & Horticulture*, 36(2), 96–106. <https://doi.org/10.1080/01448765.2019.1698464>
- Muhammad, S., Fathelrahman, E., & Ullah, R. U. T. (2015). Factors affecting consumers' willingness to pay for certified organic food products in United Arab Emirates. *Journal of Food Distribution Research*, 46(1), 37–45.
- Nandi, R., Bokelmann, W., Gowdru, N. V., & Dias, G. (2017). Factors influencing consumers' willingness to pay for organic fruits and vegetables: Empirical evidence from a consumer survey in India. *Journal of Food Products Marketing*, 23(4), 430–451.
- Pandey, D., Kakkar, A., Farhan, M., & Khan, T. A. (2019). Factors influencing organic foods purchase intention of Indian customers. *Organic Agriculture*, 9, 357–364. <https://doi.org/10.1007/s13165-018-0240-z>
- Pang, S. M., Tan, B. C., & Lau, T. C. (2021). Antecedents of consumers' purchase intention towards organic food: Integration of theory of planned behavior and protection motivation theory. *Sustainability*, 13(9), Article 5218. <https://doi.org/10.3390/su13095218>
- Paul, J., & Rana, J. (2012). Consumer behavior and purchase intention for organic food: A review and research agenda. *Journal of Retailing and Consumer Services*, 19(1), 79–92.
- Pawlewicz, A. (2020). Change of price premiums trend for organic food products: The example of the Polish egg market. *Agriculture*, 10(2), Article 35. <https://doi.org/10.3390/agriculture10020035>
- Pishbahar, E., Mahmoudi, H., & Hayati, B. (2020). The survey of heterogeneity on organic products consumers' preferences using mixed logit and latent class models: (Case study organic tea consumers in Tehran). *Journal of International Food & Agribusiness Marketing*, 32(3), 220–233. <https://doi.org/10.1080/08974438.2019.1599757>
- Pouralijan, M., Amirnezhad, H., Mojaverian, S. M., & Taslimi, M. (2021). Investigating consumers' willingness to consume organic products in Sari City of Iran. *Agricultural Economics and Development*, 28(4), 93–116.
- Pourmozafar, H., Leyane, G., Shahabe, S., & Rafiee, H. (2015). Estimating the consumers' willingness to pay for organic products: Application of Heckman two stage method (case of organic cucumbers). *Environmental Researches*, 5(10), 97–108.
- Priya, S., & Parameswari, M. (2016). Consumer attitude towards organic food products. *International Journal of Applied Research*, 2(4), 723–725.
- Rajabi, A., Shabanali Fami, H., & Pouratashi, M. (2013). Investigating the adoption component of agricultural organic products from the viewpoints of consumers. *Journal of Food Science and Technology*, 10(38), 33–43.

- Razeghi, F., Haghi, E., & Yunesian, M. (2018). Data about knowledge and tendency towards organic food use in Tehran. *Data in Brief*, 16, 955–958. <https://doi.org/10.1016/j.dib.2017.12.033>
- Rödiger, M., & Hamm, U. (2015). How are organic food prices affecting consumer behavior? A review. *Food Quality and Preference*, 43, 10–20. <https://doi.org/10.1016/j.foodqual.2015.02.002>
- Sana, U., Latif, W. U., Ahmad, W., Jafar, M. S., Pervez, M., Ahmed, N., & Xu, X.-R. (2018). Willingness-to-pay for organic food in Pakistan: The effect of motivational factors and mediated role of attitude. In *International Conference on E-Commerce and Contemporary Economic Development* (pp. 368–381). DEStech Publications. <https://doi.org/10.12783/dtem/eced2018/23996>
- Sayed Saleki, Z., Sayedsaleki, M. S., & Rahimi, M. R. (2012). Organic food purchasing behaviour in Iran. *International Journal of Business and Social Science*, 3(13), 278–288.
- Shahabi Ahangarkolaee, S., & Gorton, M. (2021). The effects of perceived regulatory efficacy, ethnocentrism and food safety concern on the demand for organic food. *International Journal of Consumer Studies*, 45(2), 273–286.
- Sharifi, R., Kheiri, B., & Ghofrani, Y. R. (2021). Behavioral model of real buyers of organic products in Guilan province. *International Journal of Agricultural Management and Development*, 11(2), 245–260.
- Shokoohi, Z., & Erfanifar, S. (2024). The effect of environmental attitude and lifestyle on consumers' willingness to pay a price premium for potato with the Organic National label. *Environmental Sciences*. Advance online publication. https://envs.sbu.ac.ir/article_104767.html?lang=en
- Sriwaranun, Y., Gan, C., Lee, M., & Cohen, D. A. (2015). Consumer' willingness to pay for organic products in Thailand. *International Journal of Social Economics*, 42(5), 480–510.
- Suciu, N. A., Ferrari, F., & Trevisan, M. (2019). Organic and conventional food: Comparison and future research. *Trends in Food Science & Technology*, 84, 49–51. <https://doi.org/10.1016/j.tifs.2018.12.008>
- Thøgersen, J. (2016). Consumer decision-making with regard to organic food products. In T. de Noronha Vaz & Peter Nijkamp (Eds.), *Traditional food production and rural sustainable development* (pp. 173–192). Taylor & Francis.
- Tohidi, A., Mousavi, S., Dourandish, A., & Alizadeh, P. (2023). Organic food market segmentation based on the neobehavioristic theory of consumer behavior. *British Food Journal*, 125(3), 810–831.
- Tsakiridou, E., Zotos, Y., & Mattas, K. (2006). Employing a dichotomous choice model to assess willingness to pay (WTP) for organically produced products. *Journal of Food Products Marketing*, 12(3), 59–69. https://doi.org/10.1300/J038v12n03_05
- Tung, S. J., Shih, C. C., Wei, S., & Chen, Y. H. (2012). Attitudinal inconsistency toward organic food in relation to purchasing intention and behavior: An illustration of Taiwan consumers. *British Food Journal*, 114(7), 997–1015.
- Vapa-Tankosić, J., Ignjatijević, S., Kranjac, M., Lekić, S., & Prodanović, R. (2018). Willingness to pay for organic products on the Serbian market. *International Food and Agribusiness Management Review*, 21(6), 791–802.
- Vehapi, S., & Dolićanin, E. (2016). Consumers behavior on organic food: Evidence from the Republic of Serbia. *Економика пољопривреде*, 63(3), 871–889.
- Veisi, H., Carolan, M. S., & Alipour, A. (2017). Exploring the motivations and problems of farmers for conversion to organic farming in Iran. *International Journal of Agricultural Sustainability*, 15(3), 303–320.
- Vermeir, I., & Verbeke, W. (2008). Sustainable food consumption among young adults in Belgium: Theory of planned behaviour and the role of confidence and values. *Ecological Economics*, 64(3), 542–553.
- Wang, J., Zhang, Y., & Liu, S. (2020, December). Analysis of consumers' perception and purchasing intention toward organic food based upon the theory of planned behavior. In *2020 International Conference on Big Data Economy and Information Management (BDEIM)* (pp. 29–33). IEEE.

- White, K., Habib, R., & Hardisty, D. J. (2019). How to shift consumer behaviors to be more sustainable: A literature review and guiding framework. *Journal of marketing*, 83(3), 22–49.
- Willer, H., Schlatter, B., Trávníček, J., Kemper, L., & Lernoud, J. (2020). *The world of organic agriculture: Statistics and emerging trends 2020*. FiBL; IFOAM Organics International. <https://www.fibl.org/en/shop-en/5011-organic-world-2020>
- Yazdanpanah, M., Moghadam, M. T., Zobeidi, T., Turetta, A. P. D., Eufemia, L., & Sieber, S. (2022a). What factors contribute to conversion to organic farming? Consideration of the health belief model in relation to the uptake of organic farming by Iranian farmers. *Journal of Environmental Planning and Management*, 65(5), 907–929. <https://doi.org/10.1080/09640568.2021.1917348>
- Yazdanpanah, M., Tajeri Moghadam, M., Javan, F., Deghanpour, M., Sieber, S., & Falsafi, P. (2022b). How rationality, morality, and fear shape willingness to carry out organic crop cultivation: A case study of farmers in southwestern Iran. *Environment Development and Sustainability*, 24, 2145–2163. <https://doi.org/10.1007/s10668-021-01523-9>
- Yilmaz, B. (2023). Factors influencing consumers' behavior towards purchasing organic foods: A theoretical model. *Sustainability*, 15(20), Article 14895. <https://doi.org/10.3390/su152014895>
- Zandi Nasab, M., Ghaffari, M., & Khadem Shahzadeh Taher, F. (2020). Identification and prioritization are the factors affecting willingness to pay for organic agricultural products from the perspective of consumers. *Journal of Agricultural Economics and Development*, 33(4), 363–376.

About the Authors



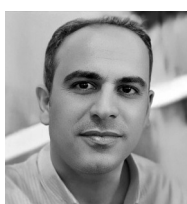
Arezou Babajani is a postdoctoral researcher at the University of Hohenheim, working on sustainable agriculture and food systems. Her work combines futures studies, scenario planning, and mixed methods to support organic farming and develop strategies for resilient, equitable agricultural practices.



Senour Ahmadi is a postdoctoral research fellow at the University of Foggia, Italy. Her work focuses on agricultural and rural development, exploring digitalization in agrifood systems, consumer behavior, and sustainability. She contributes to projects on organic food, innovation ecosystems, stakeholder networks, and governance in green and digital agricultural transitions.



Christine Wieck is a professor of agricultural and food policy at the University of Hohenheim. Her research, teaching, and outreach centers on the quantitative and qualitative analysis of the sustainable transformation of food systems in open and global markets. Since 2020, she has been a member of the scientific advisory board of the German Federal Ministry of Food and Agriculture.



Azad Ahmadi has been serving as a lecturer at Payam-e-Noor University in Iran for over 15 years. He is a researcher in the field of economics, with a particular focus on the economic dimensions of organic products and by-products. His scholarly work, predominantly published in Persian, spans agricultural economics, regional economic development, and the study of economic districts within Iran.



Mohammad Babajani is an MA student in molecular and cellular biology in Tehran, Iran. He collaborates as an independent research assistant in the fields of food health and safety, contributing to data collection, management, and statistical analysis to support evidence-based research in public health and food safety sciences.

Food-Sharing Apps' Role in Mitigating Food Waste: Examples From Poland and Czechia

Daniel Štraub ¹ , Magdalena Kubal-Czerwińska ¹ , and Filip Bolicki ²

¹ Faculty of Geography and Geology, Jagiellonian University, Poland

² Faculty of Philosophy, Jagiellonian University, Poland

Correspondence: Daniel Štraub (daniel.straub@uj.edu.pl)

Submitted: 31 October 2024 **Accepted:** 15 April 2025 **Published:** 30 July 2025

Issue: This article is part of the issue “Perspectives on Food in the Sustainable City” edited by Birgit Hoinle (University of Hohenheim), Alena Birnbaum (University of Kassel), and Petra Lütke (University of Münster), fully open access at <https://doi.org/10.17645/up.i395>

Abstract

The growing challenge of food waste is a frequent topic in international debate, as significant amounts of food remain unrecovered despite being a basic need. Digital platforms and mobile applications now play a key role in redistributing surplus food by connecting local entrepreneurs and catering services with consumers. While existing research has focused primarily on food-sharing applications' (FSAs') business models and user behaviour, the spatial dimension of these platforms remains understudied. Our research examines FSAs as business-to-customer (B2C) solutions that directly connect catering facilities with consumers, analysing their role in supporting food waste mitigation across diverse urban contexts in Poland (Warsaw, Krakow) and Czechia (Prague, Brno). Through spatial analysis of FSA-participating establishments' locations and the types of food saved, we investigate how the B2C model operates within different urban functional zones, from tourist-heavy city centres to residential districts. Our findings reveal distinct patterns in how FSA adoption aligns with cities' functional characteristics, with higher concentrations in multifunctional urban cores and emerging presence in revitalized residential areas. This spatial distribution reflects both the business opportunities within the B2C model and the cities' varied functional roles, from tourist destinations to administrative centres. Our findings highlight how FSAs align with urban functions, offering insights for expanding coverage to underserved areas while adapting to local characteristics.

Keywords

catering facilities; Czechia; food-sharing applications; food waste; Poland

1. Introduction

The growing issue of food waste is a frequent topic in international debates (FAO et al., 2022), as much of it remains unrecoverable (FAO, 2015). Despite being a basic need, large amounts of food are wasted across the supply chain. Food-sharing initiatives help mitigate this by redistributing surplus food (Davies, 2020). Local efforts—like food banks and charities—are increasingly effective through digital tools (Ciaghi & Villafiorita, 2016) such as online platforms and food-sharing applications (FSAs).

With modern information and communication technologies (ICTs), online platforms and mobile applications facilitate food redistribution by connecting local entrepreneurs and the catering sector directly with their customers (Ciaghi & Villafiorita, 2016; Farr-Wharton et al., 2014). Examples include Too Good To Go (UK, Denmark, Germany, Poland), Foodsì (Poland), Karma (UK), Nesnězeno (Czechia), as well as platforms connecting donors with charities (Italy: BringTheFood; UK: OLIO). These applications operationalize redistribution by forming partnerships with local businesses and using real-time matching algorithms to connect surplus food with consumer demand efficiently. This food redistribution, whether profit- or non-profit oriented (Harvey et al., 2014), transforms food distribution from linear-based (production to supermarket, restaurant to consumer) to network-based models (e.g., customer to producer; Harvey et al., 2019). For instance, in the linear model, surplus food from restaurants often goes to waste, whereas network-based platforms enable real-time connections between businesses with surplus food and customers seeking discounted meals (Harvey et al., 2019). Currently, various digital platforms exist for reducing food waste (Řýparová, 2021), with FSAs providing tools for businesses to list surplus and for consumers to browse and claim food, creating a more dynamic food redistribution system.

Although FSAs show potential for improving food systems (Harvey et al., 2019; Michelini et al., 2018), empirical research remains limited. Researchers have explored business participation motivations (Mazzucchelli et al., 2021; Řýparová, 2021), noting that food waste reduction requires consumer–retailer coordination (Bravi et al., 2019). Mobile applications offer valuable contributions (Hanson & Ahmadi, 2022), yet spatial aspects remain neglected in comparative studies. Our research addresses this gap by examining spatial distribution patterns of FSA-using catering facilities across urban contexts in Poland (Warsaw, Krakow) and Czechia (Prague, Brno), analyzing geographic accessibility, food-sharing patterns, and relationships to cities' functional characteristics.

In our analysis of the FSAs used by gastronomic facilities (e.g., restaurants, cafes) and food stores located in selected cities of Poland (Warsaw, Krakow) and Czechia (Prague, Brno), the following research questions were formulated prior to data collection to guide our investigation:

RQ1: How accessible is food through FSAs in the selected cities of Poland (Warsaw, Krakow) and Czechia (Prague, Brno)?

RQ2: What types of food are being saved in these cities?

RQ3: What are the spatial distribution patterns of gastronomic facilities, and how do they relate to the cities' functional roles?

RQ4: How do the spatial distribution patterns of FSA-using facilities shape food-saving opportunities, and are there specific districts where food waste cannot be mitigated through these apps?

To address these questions, we analyze data from three FSAs (Foodsi, Too Good To Go, and Nesnězeno) operating in selected cities (2022–2023), covering 811 participating facilities and food types shared. Using GIS, we examine spatial patterns in relation to urban functions, comparing FSAs participating facilities with 5,726 catering establishments from OpenStreetMap (OSM).

We chose Warsaw, Krakow, Prague, and Brno for several reasons. First, they are significant metropolitan urban centres in Poland and Czechia (Frantál et al., 2015; Kuć-Czajkowska, 2009; Romańczyk, 2018; Sýkora & Ouředníček, 2007; Tonev et al., 2017) that are essential for understanding FSAs within the broader context of European and global efforts to create sustainable food systems. These cities are prominent national capitals, cultural hubs, and key players in the European urban landscape (Kuć-Czajkowska, 2009; Romańczyk, 2018; Tonev et al., 2017). They exhibit a high degree of cosmopolitanism and attract a diverse population, including students, professionals, and expatriates, contributing to dynamic labour markets and diverse food cultures (Kunc et al., 2023; Pawlusiński & Kubal, 2017; Vaníček, 2019). Second, their status as major tourist destinations (Derek, 2018; Kunc et al., 2023; Vaníček, 2019) amplifies the significance of food consumption and waste. Third, from a European perspective, these cities increasingly represent growing awareness of food systems issues, particularly through evolving cultural approaches to food waste. Warsaw and Krakow actively engage in food system transformation through initiatives like Warsaw's Food Policy and Krakow's 2024 signing of the Milan Urban Food Policy Pact. Prague and Brno participate indirectly (Gregor et al., 2018; Nováková et al., 2021), making all four cities relevant to urban food sustainability efforts. Poland demonstrates this shift through active civil society involvement, with faith-based organizations like the Caritas Foundation connecting religious institutions with food donation initiatives—a connection where traditional values and community-driven initiatives guide food-sharing practices (Filimonau et al., 2022, 2024). Notably, a generational transformation is occurring, with younger generations showing increased support for modern food-sharing technologies (Balińska et al., 2021, 2024; Jaska et al., 2022) and food waste reduction efforts (Jaska et al., 2024; Kubal-Czerwińska, 2025) compared to their parents and grandparents (Auer & Rogers, 2022). This evolving approach to food systems has positioned these cities at the forefront of food geographies—an emerging field examining urban food production, preparation, and consumption—and discussions on transitioning toward more sustainable and just urban food systems (Abbt, 2024; Pixová & Plank, 2024; Ratering et al., 2014). Fourth, by studying FSAs in these cities, the research aligns with global and European objectives of fostering sustainable food chains that extend beyond urban centres into surrounding regions (Preiss et al., 2017; Stahlbrand, 2018). Additionally, civil society initiatives like food policy councils and movements for food justice in these cities demand greater democratic participation in food system decision-making and the rectification of social inequalities, particularly those tied to post-Soviet power dynamics in Central and Eastern Europe (Gregor et al., 2018; Nováková et al., 2021; Urząd miasta stołecznego Warszawy, 2020). The regional focus on Central and Eastern Europe fills a gap in the literature predominantly centred on Western Europe or North America (Ciaghi & Villafiorita, 2016; Farr-Wharton et al., 2014). The GIS methodology offers a quantitative approach to understanding sustainable urban systems and digital innovation in food systems (Baumann, 2020).

Food waste research in urban settings lacks spatial focus, particularly regarding ICTs' role. This study addresses this gap by examining FSAs in Poland and Czechia, connecting digital innovation, spatiality, and sustainability. While existing literature covers technological, social, and economic aspects, it neglects urban spatial dynamics in food waste patterns. Our GIS-based analysis examines food-sharing opportunities as a spatial challenge—especially relevant in Central and Eastern Europe where planning disparities affect sustainability. By analyzing

gastronomic clusters and underserved districts, we reveal how digital and spatial factors influence food waste reduction, contributing to equitable urban food-sharing practices.

This study contributes theoretically by advancing food waste management through network-based models and GIS-driven urban sustainability insights. It integrates geographical, sociological, and technological perspectives for more effective interventions. Practically, FSAs offer scalable tools to connect surplus food with consumers, especially in underserved areas. Managerially, FSAs act as a corporate social responsibility (CSR) instrument that help businesses reduce waste, boost revenue, and provide policymakers with data-driven strategies for equitable food-sharing practices. The article covers FSA literature, methods, spatial distribution, saved food types, and areas for expansion, concluding with key findings, future research, and policy recommendations.

2. Research on FSAs

Food waste has prompted online food-sharing initiatives (Ganglbauer et al., 2014) that evolved into apps like Too Good To Go and NoFoodWasted. These platforms connect surplus food with consumers through real-time matching algorithms (Apostolidis et al., 2021). By partnering with restaurants, bakeries, and supermarkets, they allow users to browse available food, purchase at discounted rates, and collect items directly from vendors.

2.1. *Emergence and Development of FSAs*

Research on FSAs is relatively new; however, it is becoming increasingly relevant. Initial emerging research in the field of FSAs mainly focused on presenting the tool of FSAs as a mechanism to reduce food waste, while exploring its potential for further development and improvement (Ciaghi & Villafiorita, 2016; Farr-Wharton et al., 2014; Fraccascia & Nastasi, 2023). FSAs align with the global goal of urban sustainability by addressing food waste challenges in densely populated areas where waste generation and food insecurity coexist. In response to the food waste problem, FSAs have become an increasingly popular initiative among users and as a business model (Hong, Kafa, & Jaegler, 2024). Micheline et al. (2018) addressed FSAs in classifying food-sharing models in the context of motivation and sustainability. The study presents three main models: (a) the “sharing for money” model, which is primarily a business-to-customer (B2C) for-profit model to reduce waste and, at the same time, generate revenue (e.g., Too Good To Go); (b) the “sharing for charity” model in which food is collected and given to non-profit organizations (e.g., Food Rescue US); and (c) the “sharing for the community” model which is a peer-to-peer model where food is shared amongst consumers (e.g., OLIO, The Food Rescue Hero; p. 205, Micheline et al., 2018); with FSAs being included in the “sharing for money” model—this does not mean that FSAs cannot be effective in other sectors.

2.2. *FSAs as Business and Social Innovation*

FSAs have been studied from business and social perspectives, highlighting their effectiveness. From a business standpoint, FSAs have been identified as catalysts for growth in social businesses (Vo-Thanh et al., 2021), particularly in the context of sustainable entrepreneurship. For instance, mathematical analyses of the business model of the Too Good To Go application have highlighted its profitability while significantly reducing food waste (Yang & Yu, in press). Similarly, Vo-Thanh et al. (2021) emphasized how FSAs contribute to social business growth by fostering innovative solutions to urban sustainability challenges. From a social

innovation perspective, FSAs play a critical role in addressing societal problems through innovative, community-driven solutions. Too Good To Go, for example, operates based on social, functional, and emotional values, which are critical to its success in achieving its social mission. The platform's ability to engage users by offering an affordable, impactful way to reduce food waste aligns with key social innovation principles, such as addressing social problems through innovative, community-driven solutions (Vo-Thanh et al., 2021). The Food Rescue Hero app, for example, connects volunteers with nonprofits to deliver surplus food to individuals facing food insecurity, reducing waste and aiding vulnerable populations (Bozhinova, 2018). Likewise, the Abundance app facilitates access to free or low-cost food, promoting inclusivity and reducing stigma (Etingoff, 2019). Barboza and Filho (2019) highlight that mobile eco-applications provide society with innovative opportunities and alternatives for promoting green consumption, including fostering lifestyle changes. Emerging research highlights both the benefits and risks of FSAs. While they promote sustainable consumption, they may also contribute to food waste. Yang et al. (2024) found that convenience and enjoyment can unintentionally encourage wasteful behaviours. FSAs raise awareness of food waste across production and consumption levels, including among children (Carulli et al., 2022; Mathisen & Johansen, 2022). Unlike food banks, which may evoke stigma, FSAs offer a dignified alternative (Ayala et al., 2022; Ntsonde & Aggeri, 2017; Zaman et al., 2025), positioning them as tools for both economic and social empowerment. Rooted in social innovation theory, FSAs balance functional and emotional values to drive user engagement (Lewandowski, 2023). This current study suggests that FSAs like Too Good To Go and Nesnězeno can mitigate urban food waste by fostering collaboration among businesses, consumers, and local authorities. Integrating social innovation frameworks, FSAs emerge as key drivers of urban sustainability, advancing food-sharing practices while promoting social and economic benefits.

2.3. Motivations for Using FSAs: Perspective of Consumers and Businesses

Motivations for using FSAs from the perspective of consumers and businesses are multifaceted as demonstrated in Table 1. While financial benefits are a primary driver, research indicates that a sense of environmental responsibility (Aschemann-Witzel et al., 2018) and the perceived usefulness of these apps (Bolton & Alba, 2012) also play a role. One of the central arguments for FSAs is their ability to economically incentivize consumers to adopt sustainable practices. Economic motivations, including cost optimization, stand out as compelling drivers for engagement, both for consumers and businesses. Balińska et al. (2024) emphasize that affordability and payment security are pivotal factors in user adoption. These apps offer practical solutions to reduce operational costs related to surplus food management (Hong, Jaegler, & Gergaud, 2024). However, focusing predominantly on economic incentives risks undermining the broader goal of fostering intrinsic motivations for sustainable behaviour. Without addressing the “value–action gap” (Essiz et al., 2023)—where individuals fail to act on pro-environmental intentions due to barriers such as convenience or lack of knowledge—the long-term impact of these apps may remain limited. Studies by Clark and Manning (2018) and Viccaro et al. (2023) have overlooked the interplay between financial incentives and other motivations, leaving a gap in understanding the broader drivers of food-saving behaviours.

Determination and motivation to use FSAs may vary depending on the side of the transaction. Apostolidis et al. (2021) identified key features and functions relative to the FSA functionality of two transactional sides—business representatives and consumers (Table 1). This allowed the identification of the divergent motivations of each party in using FSAs. Relationships between donors and recipients were also indicated by Harvey et al. (2019) for application functionality based on analysis of user data. The analysis carried out using analytical and

Table 1. FSAs stakeholder perspectives.

Aspect	Business Representatives	Consumers
Motivations	Reduce food waste while gaining revenue; Enhance brand image; Comply with sustainability goals	Save money; Access affordable food; Support sustainability and community efforts
Key features of FSA functionality	Tools to manage surplus efficiently; Integration with existing supply chains	User-friendly interface; Perceived usefulness and ease of use
Challenges	Fragmented supply chains; Need for operational adjustments	Perceived risks (e.g., food safety concerns); Trust in app functionality
Findings	Most transactions lack reciprocity; Third-party involvement fragments supply chains	Willingness to use FSAs boosted by perceived benefits, but reduced by perceived risks
Opportunities for improvement	Streamline supply chains; Tailor app features to business needs	Increase transparency; Enhance perceived safety and ease of use

graphical tools led to the conclusions that (a) the majority of transactions are not based on reciprocity, (b) the participation of third parties increasingly fragments supply chains, and (c) the structure of the FSA network is a determinant of sharing. Motivation and feelings about FSA functionality among users and product recipients were also addressed as part of learning about potential changes proposed by users (Fraccascia & Nastasi, 2023; Sienicka & Kozłowska, 2022; van der Haar & Zeinstra, 2019). For example, perceived usefulness and ease of use significantly boost consumers' willingness to use mobile apps aimed at reducing food waste, whereas perceived risks lower this willingness (Fraccascia & Nastasi, 2023). These insights underscore the importance of tailoring FSA functionality to address business representatives' and consumers' unique motivations and perceived challenges.

2.4. FSA Adoption: Opportunities and Challenges

FSAs present numerous opportunities for promoting sustainable consumption and reducing food waste. Research suggests that these apps act as “green default options” (Thaler & Sunstein, 2023), simplifying decision-making for users by embedding sustainability into everyday habits. They contribute to measurable economic and environmental benefits, offering users convenience, cost savings, and access to diverse food options (Dirsehan & Cankat, 2021). Market incentives such as public recognition or rewards for waste reduction milestones have the potential to enhance user engagement and align individual behaviour with broader sustainability goals (Mathisen & Johansen, 2022). For businesses, FSAs align with CSR objectives and deliver financial benefits by reducing surplus food volumes (Ntsondé & Aggeri, 2017), while legal incentives, such as tax breaks in Italy and France, encourage participation (Cane & Parra, 2020). Advanced technologies, including AI and smart contracts, enhance redistribution efficiency and align environmental and social objectives (Maleki Vishkaei & De Giovanni, 2024), improving business reputation and fostering customer loyalty.

From a systemic perspective, FSAs have the potential to foster collaboration across the food supply chain. With strong policy support and public education, they can tackle food waste at its source (Schanes et al., 2018) and scale from niche solutions to transformative tools for sustainable food systems (Baragwanath, 2021). The effectiveness of FSA adoption also depends on the digital readiness of the countries where these

applications operate. According to the Digital Economy and Society Index (European Commission, 2022), Czechia demonstrates moderate digital performance with 54% of its population possessing basic digital skills, aligning with the EU average. In contrast, Poland shows lower digital skill levels at 43%, positioning it among the EU's lower-performing countries in this aspect (European Commission, 2022). Unfortunately, FSA research is limited to investigating motivation and willingness to use FSAs from the user perspective (Fraccascia & Nastasi, 2023; Sienicka & Kozłowska, 2022; van der Haar & Zeinstra, 2019) without providing (inter)national comparisons.

Despite their promise, FSAs face several challenges that limit their effectiveness and scalability. A lack of trust in AI-driven technologies and concerns over data privacy can deter user engagement, as noted by Zarifis and Fu (2023) and Wang et al. (2023). Ethical challenges related to data collection must also be addressed to maintain consumer trust (Sapienza, 2018). Furthermore, younger users often prioritize convenience and brand reputation over sustainability, creating a misalignment between app design and user expectations (Calafell et al., 2019). To address this, app developers need to reevaluate their platforms to balance ease of use with meaningful educational content that fosters long-term behavioural change. The usability and perceived quality of food offered through FSAs also play a crucial role in user satisfaction and loyalty (Ng et al., 2023). While young users often appreciate convenience and time-saving benefits (Balińska et al., 2024), inconsistent product offerings and limited options can undermine their experience (Dirsehan & Cankat, 2021; Hong, Jaegler, & Gergaud, 2024). Additionally, structural inequalities within the food supply chain and inconsistent engagement from suppliers pose significant barriers to the broader adoption of FSAs (Ciulli et al., 2020).

Businesses also face notable challenges in FSA implementation and sustainability. Balancing surplus food allocation between donations and sales highlights the profit-driven nature of B2C FSAs (Rýparová, 2021). Supply–demand mismatches and fluctuating supplier participation further complicate the scalability of these platforms. Moreover, much of the existing literature focuses on consumer behaviour, leaving gaps in understanding the factors that drive or inhibit business participation in food waste management initiatives (Schanes & Stagl, 2019). Without addressing these challenges and fostering systemic collaboration, FSAs risk being relegated to incremental rather than transformative solutions for food waste reduction.

2.5. Spatial and Urban Considerations of FSA Adoption

Despite growing research, FSAs remain underexplored from a spatial perspective, particularly in urban systems. Cities, as complex socio-technical systems, face ecological and social sustainability challenges, especially in their food systems (Davies & Evans, 2019). Geographical location shapes food service operations and strategies (Lee et al., 2019). In Hangzhou, China, Zhai et al. (2015) found that food establishments are most visited in historic centres, with appeal decreasing in newer areas. Studies highlight how economic, technological, and social shifts influence the spatial distribution of gastronomy, creating concentration models in city centres and suburbs with residential areas of various density and small businesses, and tourist hubs (Kowalczyk, 2020; Kowalczyk & Derek, 2020). Thus, location likely impacts where and how FSAs might emerge in urban environments.

There are various forms of resisting food waste in urban spaces, ranging from worldview changes, community initiatives, and the use of ICTs, including FSAs. Global research has produced a classification, typology, map,

and database of food waste initiatives (Davies et al., 2017a; Davies & Legg, 2018) with a focus on ICTs in urban areas (Davies et al., 2017b). For example, Morrow (2019) compared digital food-sharing initiatives in Berlin and New York, assessing their effectiveness in promoting urban sustainability. Rýparová (2021) identified food-sharing platforms in Czechia, while Pączek et al. (2023) explored the services used in Czechia and Poland.

3. Socio-Economic Characteristics of Selected Cities for Urban Food Waste Research

Warsaw, Krakow, Prague, and Brno serve as compelling case studies for this research due to their shared histories as post-socialist cities that have undergone significant political and economic transformations since the end of communist rule. Each city has navigated the complex transition from centrally planned economies to market-oriented systems, leading to unique urban development patterns and socio-economic dynamics (Neduči & Krklješ, 2017). Detailed socio-economic characteristics are in Appendix 3 in the Supplementary File.

Warsaw, Poland's capital and largest city, has around 1.8 million residents (National Statistical Office in Warszawa, 2023). Population distribution varies across districts, with central areas like Śródmieście and Praga-Północ declining since 2021, while peripheral districts such as Białołęka and Wilanów grow due to suburbanization (National Statistical Office in Warszawa, 2023). In 2022, Białołęka gained 1,263 residents, Ursus 622, Wawer 441, Wilanów 331, and Włochy 330, while Śródmieście (−725), Bielany (−534), Mokotów (−452), and Ochota (−406) saw declines (National Statistical Office in Warszawa, 2023). These demographic disparities between central and peripheral districts of Warsaw highlight the diverse challenges and opportunities for initiatives such as FSAs, indicating the need to tailor strategies to the specific characteristics of each urban area (Urząd miasta stołecznego Warszawy, 2023; National Statistical Office in Warszawa, 2023). Warsaw's diverse population is reflected in its socio-economic structure, with younger, economically active residents concentrated in developing districts like Ursynów and Wilanów, while central areas have a higher proportion of elderly residents (National Statistical Office in Warszawa, 2023). As Poland's political, financial, and cultural hub (Raport o stanie miasta Warszawa, 2023), Warsaw has a strong service-based economy, with a GDP per capita of \$47,430 (2022), low unemployment (1.5%), and over 900,000 people employed, mainly in business services, finance, IT, and retail (NSP, 2024; Śleszyński, 2015). Key business districts, including Śródmieście (98,000 residents) and Mokotów (226,000 residents), serve as major employment hubs, attracting high-skilled professionals and international investments (National Statistical Office in Warszawa, 2023). Despite this, disparities exist, with districts like Praga-Północ (60,000 residents) and Targówek (123,000 residents) having higher unemployment and lower income levels (National Statistical Office in Warszawa, 2023). Housing development reflects Warsaw's socio-economic divide (Mendel, 2013): The majority of new housing investments occur in Białołęka (159,000 residents), Wola (150,000 residents), and Włochy (50,000 residents), where large-scale residential projects cater to the growing demand for housing (Żylski, 2019). In contrast, older districts like Praga-Północ and Wola still face deteriorating housing, despite ongoing revitalization (Żylski, 2019). Such spatial and economic patterns impact food accessibility and waste management, especially in high-density, commercial areas where food services—and FSA adoption—are concentrated. Ochota, known for its young population, and Białołęka, a rapidly expanding district attracting young families, reflect Warsaw's shifting demographics (National Statistical Office in Warszawa, 2023). While Śródmieście and Mokotów remain business and gastronomy hubs, peripheral districts like Białołęka and Ursynów rely more on supermarkets than small-scale food services. Wola and Praga-Południe act as key food service centres outside the core. Warsaw's strong entrepreneurial and start-up scene, particularly in Wola and Ochota, contrasts with lower business density in Białołęka and

Ursus (National Statistical Office in Warszawa, 2023; Urząd miasta stołecznego Warszawy, 2023). These spatial-economic dynamics shape where FSAs thrive and guide food waste management strategies.

Kraków, Poland's second-largest city with around 800,000 residents (National Statistical Office in Warszawa, 2023), is a cultural, academic, and tourism hub shaped by its history, tourism, and universities (Pawlusiński & Kubal, 2017). The city shows clear socio-economic divisions between the dense, tourist-driven Old Town, a UNESCO World Heritage Site and major commercial hub with 29,000 residents and a population density of 7,357 people/km², which serves as a key area for FSAs due to surplus food from restaurants (Kruczek & Mazanek, 2019; Yang & Yu, in press), and peripheral districts like Prądnik Biały (72,000 residents, 2,876 people/km²), Podgórze Duchackie (54,000 residents, 5,879 people/km²), and Bieżanów-Prokocim (63,000 residents, 3,874 people/km²), where housing is more affordable (14,000 to 12,000 PLN/m²; PrimeTimePr, 2024). These outer districts have stable populations and rely more on supermarkets and local markets for food access (PrimeTimePr, 2024). Nowa Huta, a district originally built in the 1950s as a socialist city for steelworks workers (Hołuj, 2017), remains less densely populated (49,260 residents, 816 people/km²; BUP Kraków, 2023) and has a lower-income profile compared to central Kraków. While heavy industry has declined, Nowa Huta is still home to large residential blocks and affordable housing, attracting young, well-educated individuals (Pawlusiński & Kubal, 2017). The district's food services are more localized, with grocery stores, traditional markets, and small eateries (Hołuj, 2017), unlike the restaurant-dominated Old Town. This creates different challenges and opportunities for FSAs. On one hand, food waste may be lower due to a more localized food economy; on the other, there may be fewer surplus food sources compared to the restaurant-heavy city centre. Additionally, lower digital engagement among older residents in Nowa Huta may pose adoption barriers for app-based food-sharing initiatives (Calafell et al., 2019).

Prague's socio-spatial structure contrasts between its historic centre, listed as a UNESCO World Heritage Site, and its suburban fringes (Zděradíčka, 2023). Its districts vary in urbanization, population density, and socio-economic composition (Ouředníček et al., 2015). Some districts, such as Praha 1 (22,967 residents, 4,200 people/km²), embody the essence of an urban centre, while others, like Praha 12 (56,591 residents, 2,400 people/km²), are distinctly suburban (Czech Statistical Office, 2023). Central districts like Praha 1 and Praha 2 have high population density, driving economic activity and digital engagement, making them prime locations for FSAs. In contrast, suburban areas housing fewer than 500 residents (e.g., Praha-Nedvězí and Praha-Královice; Czech Statistical Office, 2023) have lower population densities (1,500–3,000 people/km²) and less digital infrastructure, which can limit FSA scalability (Czech Statistical Office, 2023). Central Prague contributes about 70% of the city's economic activity (Czech Statistical Office, 2023), with significant cultural, administrative, and tourism-related establishments, fostering a dynamic and digitally connected population ideal for adopting FSAs. Prague's economy is mainly driven by the service sector, including finance (44,800 employees in 2022), IT (71,300 employees), education (45,900 employees), and public administration (39,700 employees; Czech Statistical Office, 2023). For example, central Prague, with its concentration of multinational companies, government agencies, and cultural institutions, fosters a dynamic, digitally savvy consumer base (Ouředníček et al., 2015; Sýkora & Šimoníčková, 1994). This economic and demographic vibrancy, supported by 95,000 high-skilled professionals (Czech Statistical Office, 2023), makes it an ideal hub for food services and digital innovations like FSAs. High foot traffic and strong gastronomy further drive demand for efficient food waste management, positioning FSAs as effective tools for both environmental and consumer needs (Lochman, 2021).

Brno, the second-largest city in Czechia, presents a somewhat more homogeneous urban landscape yet still exhibits a clear central-to-peripheral gradient (Kunc & Tonev, 2022). The central district, known as Brno-střed (4,617 people/km²) serves as the city's primary commercial and cultural nucleus (Czech Statistical Office, 2023; Muliček et al., 2016). Surrounding districts Brno-sever (4,089 people/km²), Brno-Židenice (4,562 people/km²), Brno-Žabovřesky (4,944 people/km²), and Brno-Vinohrady (6,297 people/km²), although of smaller area, feature a high population density of approximately 4,000 to 6,000 inhabitants per km² (Czech Statistical Office, 2023). In these districts, a high concentration of economic activity and a tech-savvy consumer base (Kunc et al., 2023) support higher adoption rates of digital tools, including FSAs. Conversely, peripheral districts in Brno generally report lower population densities—typically between 1,000 and 2,000 inhabitants per km² (e.g., Brno-Chrlice, Brno-Černovice, Brno-Bystrc)—and face challenges related to commuting to the central area, reduced digital readiness, and low economic activity (Frantál et al., 2015), which can hinder the broader implementation of FSAs. Unlike Prague, Brno's economy is driven by high-tech industries, research institutions, and manufacturing (Kunc et al., 2023). Major employers like AVG Technologies, Kiwi.com, and leading universities foster innovation and digital engagement. These socio-demographic factors highlight the importance of considering urban-scale dynamics when assessing FSA effectiveness.

Poland shows more advanced FSA adoption than Czechia (698 vs. 113 facilities, see Table 2). While further research is needed to identify precise reasons, potential explanations include market maturity, policy incentives (Schanes et al., 2018), food prices (Balińska et al., 2024), and promotional strategies. The success of early Polish adopters likely created competitive pressure, motivating others to join (Balińska et al., 2024). This pattern appears in city heatmaps comparing all catering facilities versus those using FSAs (Appendix 1 in the Supplementary File). Warsaw leads with 431 facilities (22.7% adoption), followed by Krakow with 267 facilities (32% adoption), while Czech cities show lower rates: Prague has 57 facilities (2.4% adoption) and Brno has 56 facilities (9.6% adoption). Poland's advanced adoption is evidenced by FSAs spreading beyond central districts to peripheral areas, suggesting successful early adoption created new market opportunities. Further research is needed to verify these patterns.

4. Methodology

It is important to acknowledge that FSAs represent just one of many approaches to addressing food waste in urban environments. Both Poland and Czechia have diverse ecosystems of food waste reduction initiatives, including grassroots movements, non-governmental organizations, institutional programs, and informal community networks that operate independently of digital platforms (Brunclíková & Kliková, 2018; Filimonau et al., 2022; Rýparová, 2021; Veselá et al., 2023). Our study specifically focuses on the spatial distribution and impact of FSAs as an emerging technological solution.

Three FSAs—Foodsi, Too Good To Go, and Nesněženo—were examined. During this study, Foodsi and Too Good To Go operated in Poland, where Foodsi is a Polish-based company focusing on food sharing (Foodsi, 2024) and Too Good To Go is an international company based in Denmark (Too Good To Go, 2024). Nesněženo is a Czech-based company that was the only FSA during our research present in Czechia (Nesněženo, 2024; Too Good To Go entered the Czech market in 2024). Following Michelin et al. (2018), all selected apps belong to the “sharing for money” type, where catering facilities generate income by selling discounted food, reducing waste, and recouping potential losses. This underscores the diverse motivations and functionalities of FSAs in addressing food waste, optimizing supply chains, and contributing to sustainability.

Our data collection directly addressed our research questions. To examine food access through apps (RQ1), we documented the locations of all participating facilities. Information about food offerings addressed our second question about the types of food saved (RQ2). To investigate spatial distribution patterns and their relationship to cities' functional roles (RQ3), we combined FSA facility data with OSM data on all catering establishments and relevant urban research. Finally, kernel density maps highlighted areas of high and low FSA participation to identify gaps in coverage (RQ4).

We implemented a two-step data collection process. First, we collected data through direct observation of FSAs from the user perspective, without app provider collaboration. After developing a standardized manual, investigators created user accounts and systematically collected information about available offerings between September 2022 and January 2023. We gathered 811 records from catering and food trade establishments across Warsaw, Krakow, Prague, and Brno, merging them into one database with duplicates removed.

Additionally, we collected data on all catering facilities to understand FSA adoption rates. We extracted data from OSM using Overpass Turbo, a web-based data filtering tool for OSM. OSM was selected for its comprehensive coverage, standardized categorization, and open accessibility (Arsanjani et al., 2015; Barron et al., 2013; Long & Liu, 2016). Overpass Turbo was chosen for its ability to effectively extract specific geographic features (Arsanjani et al., 2015; Dewedar & Pepe, 2024). In total, 5,726 catering facilities were obtained as shown in Table 2.

Table 2. Catering facilities: FSAs and OSM.

City	Catering facilities: FSAs*		Catering facilities: All
	<i>n</i>	%	<i>n</i>
Poland	698	25.5%	2,736
Czechia	113	3.8%	2,990
Prague	57	2.4%	2,407
Brno	56	9.6%	583
Warsaw	431	22.7%	1,902
Krakow	267	32%	834

Note: * no duplicates.

Using QGIS, we determined spatial distribution patterns based on location data and food types. Kernel density estimation generated heatmaps visualizing concentration patterns of FSA-participating facilities, allowing comparison with all catering facilities and between cities.

Despite our methodological approach, limitations exist. Data accuracy depends on information from FSAs or OSM, which may not always be current. By focusing on specific FSAs, we may overlook other innovative food waste reduction strategies employed by non-participating restaurants, potentially providing an incomplete picture of industry-wide food waste reduction efforts.

5. Results

5.1. *How Accessible Is Food Through FSAs in the Selected Cities of Poland and Czechia?*

In the cities of Warsaw, Krakow, Brno, and Prague, access to food through FSAs is primarily determined by the spatial presence of participating gastronomic facilities in the cities' central multifunctional districts, which are primarily concentrated in the central areas of the above cities (Appendix 2 in the Supplementary File; Kuć-Czajkowska, 2009; Romańczyk, 2018; Tonev et al., 2017). These areas typically host diverse functions, such as tourism, administrative offices, and entertainment hubs (Górka, 2004; Kunc & Tonev, 2022; Płaziak, 2019), leading to high accessibility for FSAs among residents, office workers, and tourists alike, making food saved through these apps highly accessible to individuals in central urban zones. For instance, in Krakow, Warsaw, Prague, and Brno, the highest concentration of FSA-using establishments is found in vibrant, well-trafficked parts of the cities, where a blend of residents, office workers, and tourists regularly visit well-trafficked parts of the cities (Kunc et al., 2023; Płaziak, 2019; Vaníček, 2019). In Krakow, the primary access points for FSA-using establishments are the Old Town and the Krowodrza (particularly in parts bridging with the Old Town on the northeast side). In Warsaw, the Śródmieście (city centre), Wola, Ochota, and both Praga-Północ and Praga-Południe exhibit the highest concentration of FSA-participating establishments, enhancing access for a wide urban demographic (Chrzanowski & Strzebońska, 2016). In Prague, central access is primarily in Praha 1 (Nove Mesto, Stare Mesto, Vsehrad, Josefov), Praha 2, Praha 3, and Praha 7, these areas are representing significant food access establishments through FSAs. Catering facilities that use FSA centres in Brno are concentrated around the Brno-Stred district, making food-sharing opportunities accessible within the city's multifunctional centre.

Catering facilities using FSAs are increasingly found in revitalized residential neighbourhoods in cities like Warsaw, Krakow, and Brno (Appendix 2 in the Supplementary File). These areas, transformed from neglected urban zones into housing and office spaces, now serve as hubs for FSAs, providing residents easier access to surplus food without travelling to the city centre. Examples include Grzegórzki, Czyżyny, Prądnik Biały, and Borek Fałęcki in Krakow, and Białołęka in Warsaw. This trend shows FSAs' adaptability across urban spaces and growing acceptance beyond traditional city centres.

However, the limited presence of FSAs in suburban and industrial areas highlights gaps in food-sharing accessibility. This is evident when comparing maps of catering facilities and FSAs in Warsaw, Krakow, and Prague (Appendix 1 in the Supplementary File). Peripheral districts like Brno's western regions, Warsaw's Rembertów, Ursynów, and Wesoła, and Krakow's Wzgórza Krzesławickie and Nowa Huta show low or no participation in FSAs. Areas characterized by extensive green spaces, low population density, and a high level of functional diversity—combining residential, commercial, and recreational functions (Raman & Roy, 2019)—pose challenges for the implementation of FSAs due to dispersed demand and logistical complexities for food service businesses (Chrzanowski & Strzebońska, 2016; Kunc & Tonev, 2022; Murawska, 2013; Temelová & Ouředníček, 2009). For example, the complexity of managing diverse functions in mixed-use developments can lead to logistical difficulties in coordinating food waste collection and redistribution, while also causing inconsistent participation among residents and businesses, complicating uniform waste management practices. Furthermore, the increased foot traffic and density associated with mixed-use areas can strain existing waste management infrastructure, potentially hindering the efficient processing of food waste (Hong, Kafa, & Jaegler, 2024).

5.2. What Types of Food Are Being Saved in These Cities?

The gathered data provide a picture of commonly shared food via FSAs (Figure 1; see also Appendix 2 in the Supplementary File). The most shared food items across all locations are pastries (29%), with desserts (28%), already-made meals (18%), and food products with a short life (16%) as the second most common group of shared food, and food items like pizza, vegan meals, sushi, or drinks as the less commonly shared food (3% or less). The dominance of pastries and desserts can be attributed to bakeries' daily production patterns and demand estimation practices, where surplus items remain safe for consumption and are logistically simpler to handle through FSAs. In contrast, items like pizza and sushi appear less frequently as they are typically prepared to order rather than in advance.

Country-level comparisons show different levels of FSA adoption where not only in Poland are there more catering facilities involved in food sharing via apps (Table 2), but the type of food is more diversified in Poland as well. These differences reflect combinations of different market maturity, local food business participation levels, and stages of FSA adoption, as mentioned above in 5.1. Similarities across countries can be observed in the high share of pastries and bakeries involved in FSAs, both at the national level and within individual cities. Observing the city level, Prague shows a higher diversity in food types than Brno, while Warsaw and Krakow have similar patterns. Knowing what food is saved reveals what may still be wasted. While desserts and pastries are well-covered, FSAs could expand to include more prepared meals from restaurants and short-shelf-life products.

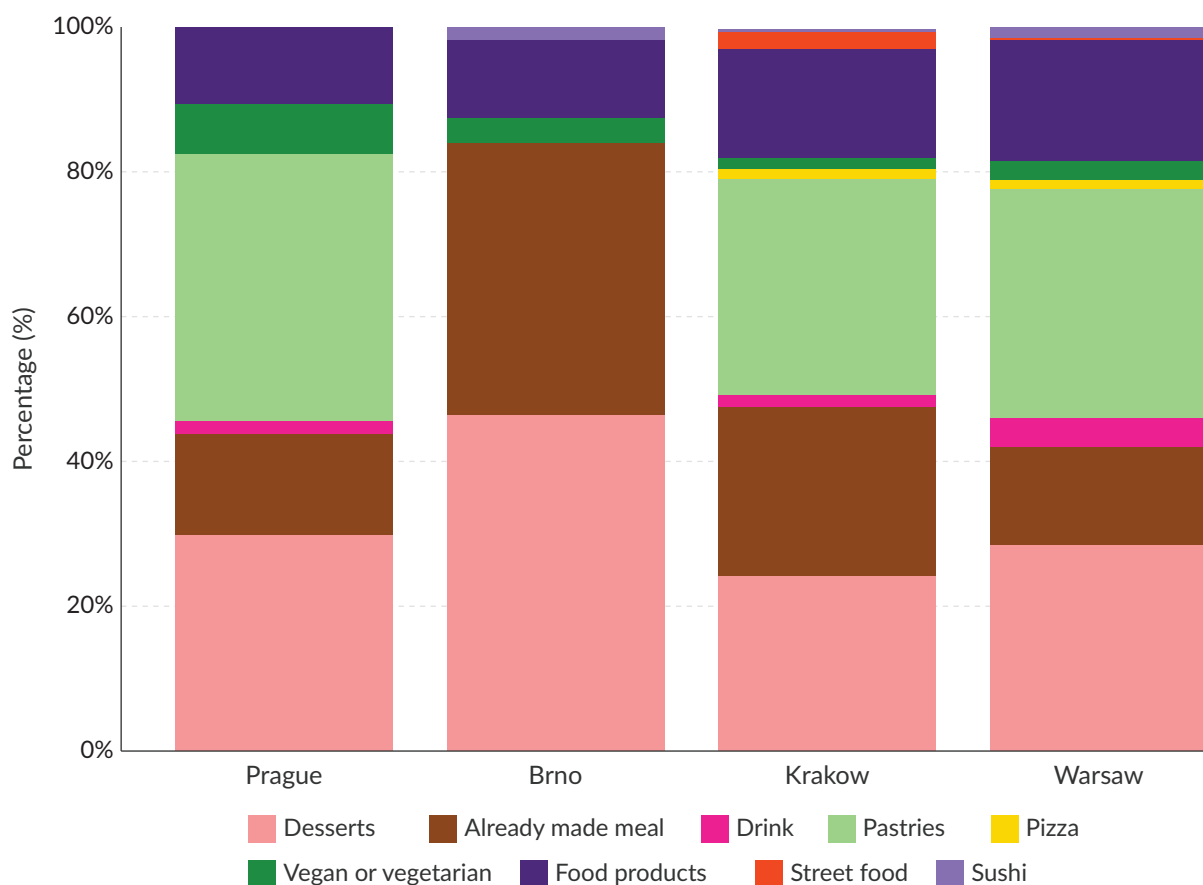


Figure 1. Type of food shared via FSAs.

5.3. How Does the Spatial Distribution of Gastronomic Facilities Reflect Urban Functions?

The spatial distribution of FSA-affiliated gastronomic facilities in Warsaw, Krakow, Brno, and Prague demonstrates regular patterns related to urban functions. Central districts serve as hotspots for FSA facilities, aligning with high social and economic activity areas, such as tourist attractions, administrative centres, and entertainment venues. Krakow, Warsaw, Prague, and Brno are distinguished as vibrant tourist destinations, administrative hubs, and centres of entertainment, each with unique landmarks and attractions that highlight these roles (Kunc et al., 2023; Pawlusiński & Kubal, 2017; Vaniček, 2019).

Krakow, Warsaw, Prague, and Brno reflect a typical urban structure where FSA adoption correlates with areas of high foot traffic and mixed-use functionality. Each city's core districts (e.g., Old Town and Krowdrza in Krakow, Śródmieście in Warsaw, Praha 1 in Prague, and Brno-Stred in Brno) concentrate FSA-affiliated facilities due to districts multifunctional roles. What is more, FSAs are spreading into revitalized residential areas with new housing, commercial spaces, and offices, creating hotspots outside central districts, particularly in Warsaw, Krakow, and Brno. In Krakow, there are nine of those hotspots, in Warsaw 11, and in Brno 10. For example, Warsaw's Białołęka (National Statistical Office in Warszawa, 2023) and Krakow's Zabłocie (Płaziak, 2019) demonstrate this trend. In these districts, new housing estates appear (in Białołęka: Osiedle Głębocka and Nowodwory; in Zabłocie: Riverside and Craft Zabłocie), which are key destinations for well-educated young people and students beginning their careers and starting families (Murawska, 2013; Płaziak, 2019). The expansion of catering facilities adopting FSAs in these districts highlights the facilities' responsiveness to growing residential demand and urban regeneration efforts, bringing food-saving opportunities closer to suburban populations. Unlike in other cities, in Prague, FSA facilities are primarily concentrated in central tourist districts (Praha 1–3 and 7), with availability decreasing in suburban areas. This pattern suggests a link between FSA distribution and tourism, as well as potential socio-economic disparities in food-sharing access outside central zones. Across the cities, FSA distribution aligns with urban functions and demographics, providing greater access in densely populated and economically active areas, while expanding into some residential areas.

5.4. How Does FSA Distribution Affect Food-Saving, and Which Areas Are Underserved?

It is mentioned above that the highest density of catering facilities that use FSAs is in centre and inner cities. With growing distances from the centre and inner city, access to FSAs decreases. The city districts with food-saving opportunities are absent in the majority of Prague. This is the case of industrial and commercial zones on the outskirts of the city (shopping centres, offices), for example Praha 10 (Malešice, Štěrboholy), Praha 15, Praha 20, Praha 18 (Letňany), Praha 6 (Ruzyně), and Praha 14 (Hloubětín), mixed with typical housing estates (blocks of flats) built in the afterwar period (WWII), for example Praha 4 (Chodov, Háje), Praha 12 (Modřany), Praha 13 (Stodůlky), Praha 8 (Kobylisy, Střížkov), Praha 18 (Letňany), and Praha 14 (Černý most), where new housing and commercial development is taking place nowadays (Ouředníček & Kopecká, 2023). These findings confirm our claims that the adoption of FSAs in Prague is in the early stages with potential growth, especially in the localities Praha 4, Praha 10, Praha 11, Praha 3, Praha 7, and Praha 17, with a population density similar to the centre and inner city (Czech Statistical Office, 2022).

While Brno, Krakow, and Warsaw share with Prague the characteristic that most catering facilities are in the city centre and inner areas, the outskirts show a different picture, featuring zones with mixed functions

(including residential, commercial, and industrial estates). In Brno, we could see that northern, western, and southern districts can access FSAs. This is the case of districts with single-family detached homes (Brno-Tuřany) mixed with industrial function (Brno-Černovice) or residential districts in the outskirts with a mix of single-family detached homes and large housing estates (Brno-Slatina, Brno-Líšeň; Frantál et al., 2015; Sýkora & Ouředníček, 2007). Although it is true that northern, western, and southern districts on the outskirts of Brno have access to catering facilities with FSAs, in absolute numbers these catering facilities represent nearly 20% of all identified catering facilities with FSAs. Districts like Brno-Komín and Brno-Medlánky with residential and commercial functions, or Brno-Ivanovice, Brno-Jehnice, Brno-Ořešín, Brno-Útěchov, Brno-Bytrc, and Brno-Kníčky with a mix of single-family detached homes (Frantál et al., 2015; Sýkora & Ouředníček, 2007) are also without any access to FSAs. Thus, in Brno as well, one can conclude that FSAs' potential is not fully exploited.

In Krakow, catering facilities with FSAs extend beyond the city centre into residential districts, bringing food-saving opportunities closer to people's homes. However, they have yet to reach the outer districts, such as Wzgórza Krzesławickie and Nowa Huta. Although these areas have large residential populations, they are less well-equipped with gastronomic facilities. For example, it has been observed that the central area of the Nowa Huta district was undergoing a decline in local commercial and service functions (Brzosko-Sermak et al., 2017), limiting the reach of entities using FSAs there.

In Warsaw, catering facilities with FSAs are not yet available in Rembertów, Wesoła, Wawer, Wilanów, and Ursynów—suburban districts known as “Warsaw's bedrooms” due to their residential nature (Murawska, 2013). Rembertów, for instance, has low population density and dispersed housing, with ample green space—over 30% of its area is forested (Maciejewska et al., 2024; Murawska, 2013). These districts are less densely populated than central districts (National Statistical Office in Warszawa, 2023), suggesting that current demand and logistical considerations may influence FSA expansion in these areas. Expanding FSAs into these areas could improve food access and contribute to food waste reduction for residents of these districts.

6. Discussion

The findings reveal that the spatial distribution of FSAs in Warsaw, Krakow, Brno, and Prague predominantly follows a central-to-peripheral gradient, with food-sharing via FSA activity primarily concentrated in central urban zones. This pattern is particularly evident when examining specific districts across our study cities, where each city's central zone demonstrates distinct characteristics that support FSA adoption. These central areas, which include high-density districts with multifunctional spaces—such as Śródmieście in Warsaw, Old Town in Krakow, and Praha 1–3 and 7 in Prague (Górka, 2004; Murawska, 2013; Ouředníček & Kopecká, 2023; Płaziak, 2019)—serve as crucial FSA hubs due to their unique combination of urban functions. These districts typically host diverse functions, such as tourism, administrative offices, entertainment hubs, and residential areas (Górka, 2004; Kunc & Tonev, 2022; Płaziak, 2019), leading to a higher concentration of catering facilities involved in food sharing. Consequently, the strong presence of FSAs in these areas aligns with the broader socio-economic landscape of these cities, where central districts function as primary hubs for food consumption and redistribution. This concentration aligns with city socio-economic structures, where central areas serve as key food consumption and redistribution hubs (Derek et al., 2020; Kowalczyk, 2020; Motycka, 2021). Catering facilities willing to use FSAs are gradually

expanding beyond city centres into revitalized residential areas like Warsaw's Białoleka and Krakow's Prądnik Biały, Czyżyny, and Zabłocie (Chrzanowski & Strzebońska, 2016; Maciejewska et al., 2024; Murawska, 2013). These regenerated districts serve as emerging secondary hubs, improving local food access without necessitating travel to central zones. This trend reflects an adaptive strategy by catering businesses using FSAs, acknowledging growing demand in diverse urban spaces beyond traditional core areas (Ciaghi & Villafiorita, 2016; Farr-Wharton et al., 2014).

Differences in population density, economic concentration, and digital infrastructure across Prague, Warsaw, Krakow, and Brno shape both opportunities and challenges for FSA adoption. In Prague, a service-driven economy—centred on finance, IT, tourism, and public administration—fosters a digitally savvy consumer base (Ouředníček et al., 2015). The presence of multinational firms, government agencies, and cultural institutions in central districts enhances digital readiness, supporting FSA adoption. High foot traffic and economic activity further drive demand for efficient food waste management, making FSAs a practical solution for both environmental and consumer needs. In contrast, Brno's economy, driven by high-tech industries, research institutions, and manufacturing, fosters digital engagement but remains more decentralized than Prague, leading to regional disparities in FSA adoption (Sýkora et al., 2000). While central areas show higher FSA participation, peripheral districts with lower economic density face challenges in digital integration. This technological orientation creates a favourable environment for digital applications; however, the more decentralized nature of Brno's employment and the lower concentration of service-oriented jobs compared to Prague may lead to regional disparities in FSA adoption. In Brno, central areas tend to show higher engagement with FSAs, while peripheral districts—characterized by less dense economic activity—might face challenges in digital integration and consumer participation. In Krakow, the Old Town's dense food scene supports FSAs primarily for commercial gain, whereas districts like Nowa Huta and Prądnik Biały rely on strong local food networks but need policy support for FSA integration. Digital readiness also varies—young professionals in central areas adopt FSAs readily, while older residents in districts like Nowa Huta and Bieżanów-Prokocim may require targeted engagement. Krakow's economy, like Warsaw's, benefits from a strong service sector, but tourism plays a larger role in shaping consumer habits (Sobala-Gwosdz et al., 2024). The presence of universities influences food consumption trends, as students represent a key demographic for FSAs. However, economic disparities between districts impact the availability and adoption of food-sharing solutions.

In Warsaw, Krakow, and Brno, we observe the emergence of hotspots for FSA outside central districts. Zabłocie in Krakow, once an industrial area, has undergone significant transformation and is now a part of the city's innovation-driven urban regeneration, contributing to its development as a "naturally occurring innovation district" (Morawska et al., 2021). Zabłocie is home to new residential complexes such as Riverside, Tarasy Wiślane, and Cordia, attracting a dynamic population, including young, well-educated professionals who are beginning their careers and establishing families (Płaziak, 2019). The influx of residents into Zabłocie mirrors the urban shift toward knowledge-based industries and innovation ecosystems, driven by the growing demand for sustainable, modern living spaces. This trend is not only a response to residential needs but also aligns with broader socio-economic changes, such as the rise of higher education and the flourishing of creative and high-tech industries (Safański, 2009). As these young, well-educated individuals settle in Zabłocie, they increasingly seek modern amenities, such as FSAs, to reduce food waste and support sustainability. Białoleka in Warsaw, like Zabłocie in Krakow, is undergoing significant urban regeneration and development, with new housing estates such as Osiedle Głębocka and

Taras Dionizosa attracting young, well-educated residents (National Statistical Office in Warszawa, 2023). The growth of FSAs in these areas highlights how catering facilities are adapting to both residential demand and urban regeneration initiatives, facilitating more sustainable consumption practices. This pattern of innovation and sustainability is closely tied to the shift in lifestyles and social behaviour seen among educated young people (Jaska et al., 2024), whose preferences for cutting-edge, socially responsible solutions like FSAs might reshape urban development.

Several districts lack FSA coverage, suggesting local catering facilities are not utilizing this technology to mitigate food waste, though it remains unclear whether these establishments employ alternative food waste reduction strategies not captured in our analysis. While reasons remain unclear, FSAs may not align with business models or operational needs, similar to concerns about delivery apps reducing profits (Dunn, 2018). Barriers include low demand, food safety concerns, and lack of integration knowledge (Too Good To Go, 2020). Limited FSA presence occurs mainly in peripheral areas with fewer catering facilities. Consumer adoption depends on perceived usefulness and ease of use, while risk concerns reduce engagement (Fraccascia & Nastasi, 2023). Further research is needed to identify barriers to wider FSA adoption, which could improve food access equity and expand waste reduction efforts.

To enhance suburban FSA access, effective strategies include business partnerships with community centres and logistical innovations. These approaches can streamline distribution while addressing challenges of lower population densities. Too Good To Go has successfully partnered with FoodCycle Los Angeles and Shell in Poland (Too Good To Go, 2024), demonstrating how such collaborations can improve food availability in suburban areas.

FSA-shared food reflects urban waste patterns, with pastries and desserts dominating, followed by ready-to-eat meals and short-shelf-life items. Bakeries often produce in excess to meet unpredictable demand, creating a surplus suitable for FSA distribution. Restaurants similarly share forecast-based surplus meals at discounts to reduce loss. Short-shelf-life products are shared near “best before” dates, while made-to-order items like pizza and sushi appear less frequently.

Analysis of FSA data reveals establishments using these apps exist in both central metropolitan districts and residential peripheries, providing food waste reduction tools to diverse urban residents. This suggests pro-environmental attitudes among business owners, with younger generations (Millennials and Gen Y) likely being primary users. The rapid uptake indicates strong demand, consistent with findings from Choi et al. (2019), Ganglbauer et al. (2014), Mazzucchelli et al. (2021), and Schanes and Stagl (2019).

7. Conclusions

The analysis of FSAs in Warsaw, Krakow, Prague, and Brno highlights key patterns in spatial distribution and adoption. FSA usage is highest in multifunctional city centres with dense food service activity, showing a clear central-to-peripheral gradient. Expansion into peripheral areas could further enhance food waste reduction and access to discounted food. Polish cities show higher adoption rates (Warsaw 22.7%, Krakow 32%) than Czech cities (Prague 2.4%, Brno 9.6%), reflecting different market maturity levels. Pastries (29%) and desserts (28%) dominate shared food types, with opportunities to expand prepared meals (18%) and short-shelf-life products (16%). FSAs are also emerging in revitalized residential areas, especially in Warsaw and Krakow, indicating growth potential beyond city centres.

The topic of FSAs' role in mitigating food waste, with examples from Poland and Czechia, presents several potential theoretical, practical, and managerial implications. FSAs play a transformative role in mitigating food waste, shifting from linear food supply models to network-based redistribution systems (Harvey et al., 2019). This challenges traditional food supply chain theories by emphasizing decentralized, tech-mediated interactions and innovation in food waste management (Harvey et al., 2014, 2019; Mazzucchelli et al., 2021). Additionally, using GIS tools to analyze spatial food waste distribution offers new insights into the impact of urban socio-demographic factors, adding complexity to urban sustainability theories.

FSAs provide practical, scalable solutions for reducing urban food waste by connecting surplus food with consumers, adaptable to cities with similar socio-demographic profiles. Optimizing their deployment through spatial and consumer behaviour analysis can enhance effectiveness, especially in underserved areas. Consumer attitudes should guide app design and engagement strategies to expand reach. By tailoring interventions based on spatial and behavioural data, FSAs can more effectively address food waste challenges in urban environments. For policymakers, promoting FSA adoption involves business incentives, grants, designated food-sharing spaces (as in Warsaw), educational campaigns, and integrating FSAs into urban food policies. Additionally, educational campaigns and integrating FSAs into urban food policies can raise awareness and ensure equitable distribution across city districts. Creators of the FSA should expand beyond bakeries and cafes, target suburban areas with tailored marketing, offer features like longer pickup windows, and partner with local business associations to address low-participation zones. Managerially, FSAs help businesses reduce waste, generate revenue, and enhance CSR efforts, strengthening their brand image and aligning with sustainability goals. For urban planners, understanding spatial food waste dynamics supports targeted interventions. Overall, FSAs play a key role in advancing urban food waste reduction and sustainable food systems.

A limitation of this study is the lack of a deeper analysis of the benefits, drawbacks, and motivations behind FSA participation. While we examine spatial distribution patterns, understanding varied motivations remains crucial, as some businesses join FSAs for ethical reasons while others pursue financial gain, potentially creating tensions and mismatched expectations. Future research should explore common drivers encouraging businesses to support food waste reduction while balancing ethical and economic goals.

Open questions remain about FSAs' role in food sharing and what motivates catering entrepreneurs to join, especially those valuing pro-environmental responsibility. Future research should explore evolving motivations and the impact of cultural and regulatory contexts. The clustering of gastronomic facilities suggests policy diffusion, warranting comparative studies. Insights could highlight shared motives balancing ethical and economic goals, encouraging wider adoption by businesses and consumers in reducing food waste.

Acknowledgments

We thank Magdalena Pączek and Mateusz Rusin for their work on the study database. Consultations were conducted during a scholarship visit to the Department of Geography and Tourism at KU Leuven (Belgium), whose colleagues provided valuable support and insights.

Funding

This research is part of the Twinning project Building Excellence in Research of Human-Environmental Systems With Geospatial and Earth Observation Technologies, which received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 952327. The publication of this article was supported by the Priority Research Area "Anthropocene" under the Strategic Programme Excellence Initiative at Jagiellonian University.

Conflict of Interests

The authors declare no conflict of interests.

Supplementary Material

Supplementary material for this article is available online in the format provided by the authors (unedited).

References

- Abbt, J. (2024). *Alternative food networks in Kraków, Poland: Investigating the development of alternative food networks in the context of post-transformation processes in Kraków, Poland* [Master's thesis, Department of Geography, University of Zurich, Switzerland]. https://www.zora.uzh.ch/id/eprint/261589/1/Thesis_Abbt.pdf
- Apostolidis, C., Brown, D., Wijetunga, D., & Kathriarachchi, E. (2021). Sustainable value co-creation at the bottom of the pyramid: Using mobile applications to reduce food waste and improve food security. *Journal of Marketing Management*, 37(9/10), 856–886. <https://doi.org/10.1080/0267257x.2020.1863448>
- Arsanjani, J. J., Zipf, A., Mooney, P. J., & Helbich, M. (2015). *OpenStreetMap in GIScience: Experiences, research, and applications*. Springer.
- Aschemann-Witzel, J., Giménez, A., & Gastón, A. (2018). Convenience or price orientation? Consumer characteristics influencing food waste behaviour in the context of an emerging country and the impact on future sustainability of the global food sector. *Global Environmental Change*, 49, 85–94. <https://doi.org/10.1016/j.gloenvcha.2018.02.002>
- Auer, K., & Rogers, H. (2022). A research agenda for circular food waste management in Bavaria. *Transportation Research Procedia*, 67, 131–136. <https://doi.org/10.1016/j.trpro.2022.12.043>
- Ayala, V., Caldwell, J. I., Garcia-Silva, B., Shah, D., Garcia, V., & Kuo, T. (2022). Increasing surplus food redistribution to improve food access through a partnership between public health and a technology-based company. *Journal of Health Care for the Poor and Underserved*, 33(4), 7–24. <https://doi.org/10.1353/hpu.2022.0156>
- Balińska, A., Jaska, E., & Werenowska, A. (2021). The role of eco-apps in encouraging pro-environmental behavior of young people studying in Poland. *Energies*, 14(16), Article 4946. <https://doi.org/10.3390/en14164946>
- Balińska, A., Werenowska, A., & Jaska, E. (2024). The importance of mobile applications in reducing food waste—The example of the TooGoodToGo application. *Journal of Modern Science*, 56(2), 190–214. <https://doi.org/10.13166/jms/188723>
- Baragwanath, T. (2021). *Digital opportunities for demand-side policies to improve consumer health and the sustainability of food systems* (OECD Food, Agriculture and Fisheries Papers, No. 148). OECD Publishing. <https://doi.org/10.1787/bec87135-en>
- Barboza, M. N. L., & Filho, E. J. M. A. (2019). Green consumption values in mobile apps. *Journal of International Consumer Marketing*, 31(1), 66–83. <https://doi.org/10.1080/08961530.2018.1490052>

- Barron, C., Neis, P., & Zipf, A. (2013). A comprehensive framework for intrinsic OpenStreetMap quality analysis. *Transactions in GIS*, 18(6), 877–895. <https://doi.org/10.1111/tgis.12073>
- Baumann, J. (2020, December 2). GIS project helps with food insecurity and waste. Esri. <https://www.esri.com/about/newsroom/arcuser/foodinsecurity>
- Bolton, L. E., & Alba, J. W. (2012). When less is more: Consumer aversion to unused utility. *Journal of Consumer Psychology*, 22(3), 369–383. <https://doi.org/10.1016/j.jcps.2011.09.002>
- Bozhinova, K. (2018, September 12). 14 apps preventing food waste. *FoodTank*. <https://foodtank.com/news/2018/09/apps-preventing-food-waste>
- Bravi, L., Murmura, F., Savelli, E., & Viganò, E. (2019). Motivations and actions to prevent food waste among young Italian consumers. *Sustainability*, 11(4), Article 1110. <https://doi.org/10.3390/su11041110>
- Brunclíková, L., & Kliková, J. (2018). Dumpster diving jako pramen kreativity. *Lidé města*, 20(1), 63–79.
- Brzosko-Sermak, A., Płaziak, M., & Trzepacz, P. (2017). Przemiany funkcji handlowych i usługowych centrum dzielnicy mieszkaniowej na przykładzie Krakowa-Nowej Huty. *Prace Komisji Geografii Przemysłu Polskiego Towarzystwa Geograficznego*, 31(2), 95–110.
- BUP Kraków. (2023, December 31). Liczba mieszkańców w poszczególnych dzielnicach (wg. stanu na 31.12.2023) oraz powierzchnia dzielnic. *Biuletyn Informacji Publicznej Miasta Krakowa*.
- Calafell, G., Banqué, N., & Vicianá, S. (2019). Purchase and use of new technologies among young people: Guidelines for sustainable consumption education. *Sustainability*, 11(6), Article 1541. <https://doi.org/10.3390/su11061541>
- Cane, M., & Parra, C. (2020). Digital platforms: Mapping the territory of new technologies to fight food waste. *British Food Journal*, 122(5), 1647–1669. <https://doi.org/10.1108/BFJ-06-2019-0391>
- Carulli, M., Bordegoni, M., & Spadoni, E. (2022). Applications virtually augmenting real experiences for behavioral change. *Computer-Aided Design & Applications*, 19(1), 176–190. <https://doi.org/10.14733/cadaps.2022.176-190>
- Choi, T., Guo, S., Liu, N., & Shi, X. (2019). Values of food leftover sharing platforms in the sharing economy. *International Journal of Production Economics*, 213, 23–31. <https://doi.org/10.1016/j.ijpe.2019.03.005>
- Chrzanowski, M. A., & Strzebońska, A. (2016). *Diagnoza krakowskich dzielnic 2016. Potencjały i wyzwania rozwojowe*. Centrum Ewaluacji i Analizy Polityk Publicznych Uniwersytetu Jagiellońskiego (CEAPP).
- Ciaghi, A., & Villafiorita, A. (2016). Beyond food sharing: Supporting food waste reduction with ICTs. In *2016 IEEE International Smart Cities Conference (ISC2)* (pp. 1–6). IEEE. <https://doi.org/10.1109/isc2.2016.7580874>
- Ciulli, F., Kolk, A., & Boe-Lillegraven, S. (2020). Circularity brokers: Digital platform organizations and waste recovery in food supply chains. *Journal of Business Ethics*, 167(2), 299–331. <https://doi.org/10.1007/s10551-019-04160-5>
- Clark, J., & Manning, L. (2018). What are the factors that an opportunity sample of UK students insinuate as being associated with their wastage of food in the home setting? *Resources, Conservation and Recycling*, 130, 20–30. <https://doi.org/10.1016/j.resconrec.2017.11.005>
- Czech Statistical Office. (2022). *Statistical yearbook of Prague—2021*.
- Czech Statistical Office. (2023). *Statistical yearbook of Prague—2022*.
- Davies, A. (2020). Food sharing. In J. Duncan, M. Carolan, & J. S. C. Wiskerke (Eds.), *Routledge handbook of sustainable and regenerative food systems* (1st ed., pp. 204–217). Taylor & Francis.
- Davies, A., Edwards, F., Marovelli, B., Morrow, O., Rut, M., & Weymes, M. (2017a). Creative construction: Crafting, negotiating and performing urban food sharing landscapes. *Area*, 49(4), 510–518. <https://doi.org/10.1111/area.12340>

- Davies, A., Edwards, F., Marovelli, B., Morrow, O., Rut, M., & Weymes, M. (2017b). Making visible: Interrogating the performance of food sharing across 100 urban areas. *Geoforum*, 86, 136–149. <https://doi.org/10.1016/j.geoforum.2017.09.007>
- Davies, A., & Evans, D. (2019). Urban food sharing: Emerging geographies of production, consumption and exchange. *Geoforum*, 99, 154–159. <https://doi.org/10.1016/j.geoforum.2018.11.015>
- Davies, A., & Legg, R. (2018). Fare sharing: Interrogating the nexus of ICT, urban food sharing, and sustainability. *Food, Culture & Society*, 21(2), 233–254. <https://doi.org/10.1080/15528014.2018.1427924>
- Derek, M. (2018). Spatial structure of tourism in a city after transition: The case of Warsaw, Poland. In D. Müller & M. Więckowski (Eds.), *Tourism in transitions: Recovering decline, managing change* (pp. 157–171). Springer. https://doi.org/10.1007/978-3-319-64325-0_9
- Derek, M., Kowalczyk, A., Kholodilin, K. A., Limonov, L., Kubal-Czerwińska, M., & Fialová, D. (2020). Changes in the distribution of gastronomic services in the city centre. In A. Kowalczyk & M. Derek (Eds.), *Gastronomy and urban space: Changes and challenges in geographical perspective* (pp. 159–181). Springer. https://doi.org/10.1007/978-3-030-34492-4_7
- Dewedar, A. K. H., & Pepe, M. (2024). The use of OpenStreetMap and GIS software to identify masonry bridge in a specific region and to build a database to preserving historical structures. *Geographia Technica*, 19(2), 186–196. https://doi.org/10.21163/gt_2024.192.15
- Dirsehan, T., & Cankat, E. (2021). Role of mobile food-ordering applications in developing restaurants' brand satisfaction and loyalty in the pandemic period. *Journal of Retailing and Consumer Services*, 62, Article 102608. <https://doi.org/10.1016/j.jretconser.2021.102608>
- Dunn, E. (2018, February 3). How delivery apps may put your favorite restaurant out of business. *The New Yorker*. <https://www.newyorker.com/culture/annals-of-gastronomy/are-delivery-apps-killing-restaurants>
- Essiz, O., Yurteri, S., Mandrik, C., & Senyuz, A. (2023). Exploring the value–action gap in green consumption: Roles of risk aversion, subjective knowledge, and gender differences. *Journal of Global Marketing*, 36(1), 67–92. <https://doi.org/10.1080/08911762.2022.2116376>
- European Commission. (2022). *Digital Economy and Society Index (DESI) 2022*. <https://digital-strategy.ec.europa.eu/en/library/digital-economy-and-society-index-desi-2022>
- FAO. (2015). *Technical platform on the measurement and reduction of food loss and waste (TPFLW)*. <https://www.fao.org/platform-food-loss-waste/background/en>
- FAO, IFAD, UNICEF, WFP, & WHO. (2022). *The state of food security and nutrition in the world 2022: Repurposing food and agricultural policies to make healthy diets more affordable*. <https://doi.org/10.4060/cc0639en>
- Farr-Wharton, G., Choi, J., & Foth, M. (2014). Food talks back: Exploring the role of mobile applications in reducing domestic food wastage. In *Proceedings of the 26th Australian Computer-Human Interaction Conference, OzCHI 2014* (pp. 352–361). Association for Computing Machinery. <https://doi.org/10.1145/2686612.2686665>
- Filimonau, V., Matute, J., Kubal-Czerwińska, M., & Mika, M. (2024). How to encourage food waste reduction in kitchen brigades: The underlying role of 'green' transformational leadership and employees' self-efficacy. *Journal of Hospitality and Tourism Management*, 59, 139–148. <https://doi.org/10.1016/j.jhtm.2024.04.005>
- Filimonau, V., Mika, M., Kubal-Czerwińska, M., Zajadacz, A., & Durydiwka, M. (2022). Religious values and family upbringing as antecedents of food waste avoidance. *Global Environmental Change*, 75, Article 102547. <https://doi.org/10.1016/j.gloenvcha.2022.102547>
- Foodsī. (2024). O nas. <https://foodsī.pl/about>
- Fraccascia, L., & Nastasi, A. (2023). Mobile apps against food waste: Are consumers willing to use them?

- A survey research on Italian consumers. *Resources, Conservation & Recycling Advances*, 18, Article 200150. <https://doi.org/10.1016/j.rcradv.2023.200150>
- Frantál, B., Greer-Wootten, B., Klusáček, P., Krejčí, T., Kunc, J., & Martinát, S. (2015). Exploring spatial patterns of urban brownfields regeneration: The case of Brno, Czech Republic. *Cities*, 44, 9–18. <https://doi.org/10.1016/j.cities.2014.12.007>
- Ganglbauer, E., Fitzpatrick, G., Subasi, Ö., & Guldenpfennig, F. (2014). Think globally, act locally: A case study of a free food sharing community and social networking. In Fussell S., Lutters W. (Eds.), *CSCW '14: Proceedings of the 17th ACM Conference on Computer Supported Cooperative Work & Social Computing* (pp. 911–921). Association for Computing Machinery. <https://doi.org/10.1145/2531602.2531664>
- Górka, Z. (2004). Krakowska dzielnica staromiejska w dobie społeczno-ekonomicznych przemian Polski na przełomie XX i XXI wieku : użytkowanie ziemi i funkcje. Wydawnictwo Uniwersytetu Jagiellońskiego. <https://ruj.uj.edu.pl/xmlui/handle/item/253613>
- Gregor, J., Kropáč, J., & Pavlas, M. (2018). *Brno's review of practices: Smart waste management. An introductory review of SMART measures and best practices in waste collection and utilization of municipal solid waste*. Ruggedised. <https://respitalka.brno.cz/wp-content/uploads/2019/07/RUGGEDISED-Smart-waste-management.pdf>
- Hanson, V., & Ahmadi, L. (2022). Mobile applications to reduce food waste within Canada: A review. *The Canadian Geographer/Le Géographe canadien*, 66(2), 402–411. <https://doi.org/10.1111/cag.12733>
- Harvey, J., Smith, A., & Golightly, D. (2014). Giving and sharing in the computer-mediated economy. *Journal of Consumer Behaviour*, 16(4), 363–371. <https://doi.org/10.1002/cb.1499>
- Harvey, J., Smith, A., Goulding, J., & Branco Illodo, I. (2019). Food sharing, redistribution, and waste reduction via mobile applications: A social network analysis. *Industrial Marketing Management*, 88, 437–448. <https://doi.org/10.1016/j.indmarman.2019.02.019>
- Etingoff, K. (2019). *New mobile app fights food insecurity and stigma*. HealthCity. <https://healthcity.bmc.org/new-mobile-app-fights-food-insecurity-and-stigma>
- Hołuj, D. (2017). The socialist tangible heritage of Nowa Huta as the local economic asset. *Studia Miejskie*, 26, 125–139. <https://doi.org/10.25167/sm2017.026.09>
- Hong, J., Jaegler, A., & Gergaud, O. (2024). Mobile applications to reduce food waste in supply chains: A systematic literature review. *British Food Journal*, 126(2), 509–530. <https://doi.org/10.1108/bfj-09-2022-0742>
- Hong, J., Kafa, N., & Jaegler, A. (2024). Exploring barriers and motivations in the adoption of food waste mobile applications. *International Transactions in Operational Research*. Advance online publication. <https://doi.org/10.1111/itor.13587>
- Jaska, E., Balińska, A., & Werenowska, A. (2024). Postawy pokolenia Z wobec zmian środowiskowych. *Turystyka i Rozwój Regionalny*, 21, 81–91. <https://doi.org/10.22630/TIRR.2024.21.7>
- Jaska, E., Werenowska, A., & Balińska, A. (2022). Environmentally and socially sustainable behaviors of Generation Z in Poland stimulated by mobile applications. *Energies*, 15(21), Article 7904. <https://doi.org/10.3390/en15217904>
- Kowalczyk, A. (2020). Dimensions of gastronomy in contemporary cities. In A. Kowalczyk & M. Derek (Eds.), *Gastronomy and urban space: Changes and challenges in geographical perspective* (pp. 91–118). Springer. https://doi.org/10.1007/978-3-030-34492-4_3
- Kowalczyk, A., & Derek, M. (2020). Relations between gastronomy and the city. In A. Kowalczyk & M. Derek (Eds.), *Gastronomy and urban space: Changes and challenges in geographical perspective* (pp. 3–51). Springer. https://doi.org/10.1007/978-3-030-34492-4_1

- Kruczek, Z., & Mazanek, L. (2019). Krakow as a tourist metropolitan area. Impact of tourism on the economy of the city. *Studia Periegetica*, 2(26), 25–41.
- Kubal-Czerwińska, M. (2025). What can I do about it? The rising awareness of the trend of mitigating household food waste among members of Generation Z. *International Journal of Sustainable Society*. Advance online publication. <https://doi.org/10.1504/IJSSOC.2026.10068847>
- Kuć-Czajkowska, K. (2009). Funkcje metropolitalne Warszawy, Pragi i Budapesztu. *Studia Regionalne i Lokalne*, 1(35), 74–94.
- Kunc, J., Sikorski, D., Novotná, M., Brezdeň, P., Ilnicki, D., Tonev, P., & Marek, A. (2023). Industrial legacy towards modern urban environment: A comparative study of Wroclaw and Brno. *Bulletin of Geography. Socio-Economic Series*, 61, 71–92. <https://doi.org/10.12775/bgss-2023-0026>
- Kunc, J., & Tonev, P. (2022). Brno in transition: From industrial legacy towards modern urban environment. In W. Cudny & J. Kunc (Eds.), *Growth and change in post-socialist cities of Central Europe* (pp. 137–157). Routledge.
- Lee, Y. J., Pennington-Gray, L., & Kim, J. (2019). Does location matter? Exploring the spatial patterns of food safety in a tourism destination. *Tourism Management*, 71, 18–33. <https://doi.org/10.1016/j.tourman.2018.09.016>
- Lewandowski, M. (2023). The strive to social innovation that thrives on the mobile application. A case study of Too Good To Go. *Procedia Computer Science*, 225, 902–911. <https://doi.org/10.1016/j.procs.2023.10.077>
- Lochman, J. (2021). The spatial distribution of sustainable gastronomy: A case study of tourism in Prague. *Tourism Recreation Research*, 48(5), 693–709. <https://doi.org/10.1080/02508281.2021.1949676>
- Long, Y., & Liu, L. (2016). Transformations of urban studies and planning in the big/open data era: A review. *International Journal of Image and Data Fusion*, 7(4), 295–308. <https://doi.org/10.1080/19479832.2016.1215355>
- Maciejewska, A., Sobieraj, J., & Kuzak, Ł. (2024). Analysis of greenery coverage of the area of the City of Warsaw on the quality of life of residents on the basis of spatial and statistical data. *Archives of Civil Engineering*, 239–260. <https://doi.org/10.24425/ace.2024.148909>
- Maleki Vishkaei, B., & De Giovanni, P. (2024). Smart food-sharing platforms for social sustainability: A heuristic algorithm approach. *International Transactions in Operational Research*. Advance online publication. <https://doi.org/10.1111/itor.13543>
- Mathisen, T. F., & Johansen, F. R. (2022). The impact of smartphone apps designed to reduce food waste on improving healthy eating, financial expenses and personal food waste: Crossover pilot intervention trial studying students' user experiences. *JMIR Formative Research*, 6(9), Article e38520. <https://doi.org/10.2196/38520>
- Mazzucchelli, A., Gurioli, M., Graziano, D., Quacquarelli, B., & Aouina-Mejri, C. (2021). How to fight against food waste in the digital era: Key factors for a successful food sharing platform. *Journal of Business Research*, 124, 47–58. <https://doi.org/10.1016/j.jbusres.2020.11.055>
- Mendel, M. (2013). Residential developers as actors of urban transformation in post-socialist Warsaw. [Doctoral dissertation, Warszawa: Instytut Geografii i Przestrzennego Zagospodarowania PAN, unpublished manuscript]
- Michelini, L., Principato, L., & Iasevoli, G. (2018). Understanding food sharing models to tackle sustainability challenges. *Ecological Economics*, 145, 205–217. <https://doi.org/10.1016/j.ecolecon.2017.09.009>
- Morawska, I., Anielska, K., Gądecki, J., & Afeltowicz, Ł. (2021). Changes in urban fabric—A cause or a result of an innovation district? *Journal of Urbanism: International Research on Placemaking and Urban Sustainability*, 17(1), 89–110. <https://doi.org/10.1080/17549175.2021.2005118>

- Morrow, O. (2019). Community self-organizing and the urban food commons in Berlin and New York. *Sustainability*, 11(13), Article 3641. <https://doi.org/10.3390/su11133641>
- Motycka, M. (2021). Impact of Covid-19 pandemic on Prague's gastronomy. *SunText Review of Economics & Business*, 2(2), Article 127. <https://doi.org/10.51737/2766-4775.2021.027>
- Mulíček, O., Osman, R., & Seidenglanz, D. (2016). Time-space rhythms of the city—The industrial and post-industrial Brno. *Environment and Planning A: Economy and Space*, 48(1), 115–131. <https://doi.org/10.1177/0308518X15594809>
- Murawska, E. (2013). *Ranking of Warsaw districts according to the attractiveness of living conditions*. National Statistical Office in Warsaw.
- National Statistical Office in Warszawa. (2023). *Panorama dzielnic Warszawy w 2022 r.*
- Neduči, D., & Krklješ, M. (2017). Post-socialism and urban transition: Transforming the socialist city. *Facta Universitatis – Series Architecture and Civil Engineering*, 15(3), 347–357. <https://doi.org/10.2298/fuace160817023n>
- Nesnězeno. (2024). Nesnězeno blog. Blog CZ – Nesnezeno.eco. <https://munch.eco/nesnezeno/blog-cz/>
- Ng, K. S. P., Zhang, J., Wong, J. W. C., & Luo, K. K. (2023). Internal factors, external factors and behavioral intention toward food delivery apps (FDAs). *British Food Journal*, 125(8), 2970–2987. <https://doi.org/10.1108/BFJ-07-2022-0586>
- Nováková, P., Hák, T., & Janoušková, S. (2021). An analysis of food waste in Czech households—A contribution to the international reporting effort. *Foods*, 10(4), Article 875. <https://doi.org/10.3390/foods10040875>
- Ntsondé, J., & Aggeri, F. (2017, June 21–24). *Building responsible innovation ecosystem, a new approach for inter-organizational cooperation* [Paper presentation]. European Agency of Management (EURAM) 2017, Glasgow, UK.
- Ouředníček, M., & Kopecká, Z. (2023). Towards ordinary quarters: The development of housing estates in Prague after transformation. *Journal of Housing and the Built Environment*, 38, 61–84. <https://doi.org/10.1007/s10901-021-09891-4>
- Ouředníček, M., Pospíšilová, L., Pačková, P., Kopecka, Z., & Novák, J. (2015). The velvet and mild: Socio-spatial differentiation in Prague after transition. In T. Tammaru, M. van Ham, S. Marcińczak, & S. Musterd (Eds.), *Socio-economic segregation in European capital cities: East meets West* (1st ed., pp. 285–310). Routledge. <https://doi.org/10.4324/9781315758879>
- Pączek, M., Rusin, M., Bolicki, F., Štraub, D., & Kubal-Czerwińska, M. (2023, April 24). *The role of food sharing applications (FSAs) in supporting food waste mitigation in cities—Examples from Poland and Czechia* [Paper presentation]. GEOProcessing 2023: The Fifteenth International Conference on Advanced Geographic Information Systems, Applications, and Services, Venice, Italy.
- Pawlusiński, R., & Kubal, M. (2017). A new take on an old structure? Creative and slow tourism in Krakow (Poland). *Journal of Tourism and Cultural Change*, 16(3), 265–285. <https://doi.org/10.1080/14766825.2017.1330338>
- Pixová, M., & Plank, C. (2024). Urban food governance without local food: Missing links between Czech post-socialist cities and urban food alternatives. *Agriculture and Human Values*, 41, 1523–1539. <https://doi.org/10.1007/s10460-024-10567-2>
- Płaziak, M. (2019). Atrakcyjność centrum miasta i centrów dzielnic Krakowa w opinii mieszkańców. *Konwersatorium Wiedzy o Mieście*, 32(4), 79–86. <https://doi.org/10.18778/2543-9421.04.06>
- Preiss, P., Charão-Marques, F., & Wiskerke, J. S. C. (2017). Fostering Sustainable urban–rural linkages through local food supply: A transnational analysis of collaborative food alliances. *Sustainability*, 9(7), Article 1155. <https://doi.org/10.3390/su9071155>

- PrimeTimePr. (2024). Ekspertownik rynku nieruchomości – Rynek mieszkaniowy w Krakowie-wyzwania i perspektywy. <https://primetimepr.pl/wp-content/uploads/2024/10/Ekspertownik-Rynku-Nieruchomosci-Rynek-mieszkaniowy-w-Krakowie-wyzwania-i-perspektywy-2.pdf>
- Raman, R., & Roy, U. (2019). Taxonomy of urban mixed land use planning. *Land Use Policy*, 88, Article 104102. <https://doi.org/10.1016/j.landusepol.2019.104102>
- Ratinger, T., Hebáková, L., Michalek, T., Tomka, A., Mrháľková, I., & Šticová, O. (2014). Sustainable food consumption—The case of the Czech Republic. *Review of Agricultural and Applied Economics*, 17, 65–73.
- Romańczyk, K. M. (2018). Krakow—The city profile revisited. *Cities*, 73, 138–150. <https://doi.org/10.1016/j.cities.2017.09.011>
- Rýparová, A. (2021). Digital food sharing: Motivation and practice of sharing in Czechia. *Geografie*, 126(3), 263–287. <https://doi.org/10.37040/geografie2021126030263>
- Sałański, T. (2009). Poziom wykształcenia ludności jako czynnik rozwoju regionalnego na przykładzie województwa mazowieckiego. *Mazowsze. Studia Regionalne*, 2, 161–184.
- Sapienza, S. (2018). Privacy, security and trust in collaborative models for food consumption data gathering. In *Proceedings of the 18th European Conference on Digital Government ECDG 2018* (pp. 288–294). Academic Conferences and Publishing International Limited.
- Schanes, K., Dobernig, K., & Gözet, B. (2018). Food waste matters - A systematic review of household food waste practices and their policy implications. *Journal of Cleaner Production*, 182, 978–991. <https://doi.org/10.1016/j.jclepro.2018.02.030>
- Schanes, K., & Stagl, S. (2019). Food waste fighters: What motivates people to engage in food sharing? *Journal of Cleaner Production*, 211, 1491–1501. <https://doi.org/10.1016/j.jclepro.2018.11.162>
- Sienicka, M., & Kozłowska, J. (2022). Sharing economy oraz foodsharing w nowoczesnych rozwiązaniach technologicznych. *Akademia Zarządzania*, 6(1), 163–181. <https://doi.org/10.24427/az-2022-0010>
- Sobala-Gwosdz, A., Czakon, P., Gwosdz, K., Hetmańczyk, K., & Piech, K. (2024). *Innowacyjność i kreatywność ośrodków miejskich*. Obserwatorium Polityki Miejskiej, IRMiR. <https://doi.org/10.51733/opm.2023.24>
- Stahlbrand, L. (2018). Can values-based food chains advance local and sustainable food systems? Evidence from case studies of university procurement in Canada and the UK. *The International Journal of Sociology of Agriculture and Food*, 24(1), 77–95. <https://doi.org/10.48416/ij saf.v24i1.117>
- Sýkora, L., Kamenický, J., & Hauptmann, P. (2000). Changes in the spatial structure of Prague and Brno in the 1990s. *Acta Universitatis Carolinae Geographica*, 35(1), 61–76.
- Sýkora, L., & Ouředníček, M. (2007). Sprawling post-communist metropolis: Commercial and residential suburbanization in Prague and Brno, the Czech Republic. In E. Razin, M. Dijst, & C. Vázquez (Eds.), *Employment deconcentration in European metropolitan areas* (pp. 209–233). Springer.
- Sýkora, L., & Šimoničková, I. (1994). From totalitarian urban managerialism to a liberalized real estate market: Prague's transformations in the early 1990s. In M. Barlow, P. Dostál, & M. Hampl (Eds.), *Development and administration of Prague* (pp. 47–72). Instituut voor Sociale Geografie, Universiteit van Amsterdam.
- Śleszyński, P. (2015). Obszar Metropolitalny Warszawy a rozwój Mazowsza. Wybrane wyniki badań prowadzonych w projekcie „Trendy Rozwojowe Mazowsza.” *Studia regionalne i lokalne*, 16(61), 43–66.
- Temelová, J., & Ouředníček, M. (2009). Twenty years after socialism: The transformation of Prague's inner structure. *Studia Universitatis Babeş-Bolyai, Sociologia*, 54(1), 9–20.
- Thaler, R. H., & Sunstein, C. R. (2023). *Impuls. Wydanie finalne. Jak podejmować właściwe decyzje dotyczące zdrowia, dobrobytu i szczęścia*. Zys i S-ka Wydawnictwo.
- Tonev, P., Dvořák, Z., Šašínska, P., Kunc, J., Chaloupková, M., & Šilhan, Z. (2017). Different approaches to defining metropolitan areas (case study: cities of Brno and Ostrava, Czech Republic). *Geographia Technica*, 12(1), 108–120. https://doi.org/10.21163/GT_2017.121.11

- Too Good To Go. (2020, September 9). *Food-to-go employees care about food waste but don't have the tools or training to tackle it* [Press release]. <https://www.toogoodtogo.com/press/food-waste-has-got-to-go>
- Too Good To Go. (2024). *About us*. <https://www.toogoodtogo.com/pl/about-us>
- Urząd miasta stołecznego Warszawy. (2020). *Polityka żywnościowa miasta stołecznego Warszawy*. <https://um.warszawa.pl/documents/56602/0/Polityka+%C5%BCywno%C5%9Bciowa+Warszawy.pdf/8f742e58-f104-4afa-5cfa-016a4a16d0ff?t=1659965601016>
- Urząd miasta stołecznego Warszawy. (2023). *Raport o stanie miasta Warszawa*. https://bip.warszawa.pl/documents/d/biuro-strategii-i-analiz/rosm_2023_dostepny_8lipca
- van der Haar, S., & Zeinstra, G. G. (2019). *The impact of Too Good To Go on food waste reduction at the consumer household level: An explorative study*. Wageningen Food & Biobased Research. <https://doi.org/10.18174/501904>
- Vaníček, J. (2019). Disparities in urban tourism in the Czech Republic. *Czech Journal of Tourism*, 8(1), 33–47. <https://doi.org/10.2478/cjot-2019-0003>
- Veselá, L., Králíková, A., & Kubíčková, L. (2023). From the shopping basket to the landfill: Drivers of consumer food waste behaviour. *Waste Management*, 169, 157–166. <https://doi.org/10.1016/j.wasman.2023.07.002>
- Viccaro, M., Coppola, A., D'Angelo, M. C., Genovese, F., Romano, S., & Cozzi, M. (2023). Young people are not all the same! The theory of planned behaviour applied to food waste behaviour across young Italian generations. *Sustainability*, 15(20), Article 14741. <https://doi.org/10.3390/su152014741>
- Vo-Thanh, T., Zaman, M., Hasan, R., Rather, R. A., Lombardi, R., & Secundo, G. (2021). How a mobile app can become a catalyst for sustainable social business: The case of Too Good To Go. *Technological Forecasting and Social Change*, 171, Article 120962. <https://doi.org/10.1016/j.techfore.2021.120962>
- Wang, W., Cao, D., & Ameen, N. (2023). Understanding customer satisfaction of augmented reality in retail: A human value orientation and consumption value perspective. *Information Technology & People*, 36(6), 2211–2233. <https://doi.org/10.1108/ITP-04-2021-0293>
- Yang, L., & Yu, M. (in press). Too Good to Go: Combating food waste with surprise clearance. *Management Science*. <https://doi.org/10.2139/ssrn.4573386>
- Yang, R., Wibowo, S., & O'Connor, P. (2024). The dark side of applying unified theory of acceptance and use of technology: Behavioral intentions toward food addiction and food waste among food delivery applications' users in China. *Journal of Sustainable Tourism*, 1–22. <https://doi.org/10.1080/09669582.2024.2312902>
- Zaman, M., Vo-Thanh, T., Hasan, R., & Babu, M. M. (2025). Mobile channel as a strategic distribution channel in times of crisis: A self-determination theory perspective. *Journal of Strategic Marketing*, 33(3), 378–393. <https://doi.org/10.1080/0965254X.2021.1959629>
- Zarifis, A., & Fu, S. (2023). Re-evaluating trust and privacy concerns when purchasing a mobile app: Re-calibrating for the increasing role of artificial intelligence. *Digital*, 3(4), 286–299. <https://doi.org/10.3390/digital3040018>
- Zděradička, M. (2023). Územně analytické podklady hl. m. Prahy jako zrcadlo dějů v území aneb doprava v datech. *Urbanismus a Uzemní Rozvoj*, 2, 25–29.
- Zhai, S., Xu, X., Yang, L., Zhou, M., Zhang, L., & Qiu, B. (2015). Mapping the popularity of urban restaurants using social media data. *Applied Geography*, 63, 113–120. <https://doi.org/10.1016/j.apgeog.2015.06.006>
- Żylski, T. (2019). *Osiedla Warszawy*. Biuro Architektury i Planowania Przestrzennego, Urząd m.st. Warszawy.

About the Authors



Daniel Štraub is a research assistant at the Department of Regional Development, Institute of Geography and Spatial Management at the Jagiellonian University in Krakow. He is a transport and social geographer and focuses on fare-free public transport policy, shared mobilities, and food waste mitigation practices.



Magdalena Kubal-Czerwińska is an assistant professor in the Department of Tourism and Health Resort Management, Institute of Geography and Spatial Management at Jagiellonian University in Krakow. Her research focuses on rural hospitality entrepreneurship, sustainable tourism, and food waste reduction. She contributes to Visegrad, H2020, and Poland's National Science Centre projects.



Filip Bolicki is a master's degree student at Jagiellonian University, focusing on culture and religion in East Asian countries and perception of space. He did his bachelor's degree at the Faculty of Geography and Geology at Jagiellonian University.



URBAN PLANNING
ISSN: 2183-7635

Urban Planning is an international, peer-reviewed open access journal in the field of urban studies. With the aim of sparking discussions and providing new perspectives on the social, political, economic, and cultural dimensions of urban life, the journal welcomes multidisciplinary approaches to the study of town and city planning, design, development, and renewal.

Recognising the value of both qualitative and quantitative methods and striving to open up debates on topics as diverse as housing, transportation, technology, sustainability, citizen participation, and heritage, among others, the journal ultimately wishes to bring together urban planning and progress and quality of life.



www.cogitatiopress.com/urbanplanning