Modeling Non-State Actor Interactions in Inclusive Urban Ecology: The Role of Community Gardens in Sustainable City Development

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ABSTRACT

Urban areas are increasingly dealing with connected issues like environmental damage, food insecurity, and the loss of inclusive public spaces, especially in fast-growing cities. This study primarily focuses on Bandar Lampung as the main case study, while Singapore, Seoul, Seville, Rosario, and Yogyakarta are used as comparative references. These problems require responses that involve the community and go beyond government-led initiatives. This research looks at how community gardens, supported by groups other than the government, like local communities, regional governments, and international networks such as UCLG-ASPAC, supports local governments in Asia-Pacific through advocacy, capacity building, and promoting inclusive sustainable development. Using examples from around the world, the study examines the urban agriculture program in Singapore, Rosario, Seoul, Seville and Yogyakarta. These cases show how community gardens can boost biodiversity, improve air quality, support food sovereignty, and create inclusive public spaces. Tropical cities, unlike those in temperate climates, can take advantage of year-round growing seasons, which opens up new possibilities for ecological innovation and local food systems. This research emphasizes that community gardens are not just green spaces; they are socio-ecological infrastructures that help strengthen urban resilience and promote justice. The involvement of groups outside the government is key to starting and expanding these initiatives. In line with Sustainable Development Goals (SDG 11, SDG 2, and SDG 13), the study concludes with practical suggestions for integrating community gardening into inclusive urban planning, particularly in tropical areas. This research provides valuable insights for policy-makers, practitioners, and international networks on creating ecologically fair and community-driven urban futures.

Keywords: community gardens, Bandar Lampung, inclusivity, sustainable city development, SDGs

Introduction

Urban areas, especially in rapidly developing regions, are facing many challenges. These include environmental damage, urban food insecurity, and the loss of inclusive public spaces. In cities like Bandar Lampung, these problems are linked; they arise from unsustainable urban growth, social inequality, and poor ecological planning. As urbanization speeds up and climate change worsens, finding community-based solutions becomes more urgent. In this setting, nature-based solutions like community gardens have received global attention as practical tools to tackle both environmental and social vulnerabilities at the same time(Cabral et al., 2017; Clarke et al., 2019).

Community gardens not only help support biodiversity and urban food systems but also create adaptive infrastructure that boosts urban resilience and livability. These green spaces help achieve environmental goals by improving local climates, supporting pollinator habitats, and managing stormwater runoff(Caputo et al., 2023; Seitz et al., 2022). They also create inclusive spaces that encourage civic participation, cultural identity, and social equity. This is particularly important in cities that have limited access to green public areas(Egerer et al., 2024; Kusumanagari & Ellisa, 2021).

Although community gardens emerge at the local level, their development and long-term sustainability are often influenced by broader governance arrangements. The growing recognition of urban agriculture as a tool for sustainable development has encouraged regional organizations and non-state actors to support local initiatives through knowledge sharing, capacity building, and advocacy. At the same time, regional efforts, especially in the Asia-Pacific, are recognizing the critical role of non-state actors in promoting local sustainability goals. Organizations like UCLG-ASPAC[1] actively support the involvement of communities, civil society, and local governments in fostering inclusive urban development through grassroots projects such as community gardens(UCLG-ASPAC, n.d.). New evidence from both the Global North and South shows the untapped potential of community gardens in tropical cities, where consistent growing seasons allow for year-round cultivation and local food resilience(Lin et al., 2024; Modibedi et al., 2021). This research argues that community gardens should be understood not merely as green spaces, but as socio-ecological infrastructures whose contributions to environmental resilience, food security, and social inclusion are strengthened through the interaction of non-state actors. In this context, collaborative governance and regional support networks play an important role in ensuring the long-term sustainability of community garden initiatives, particularly in tropical cities like Bandar Lampung.

Community gardens are recognized as valuable spaces that support urban sustainability, social bonds, and community involvement. Hou (2017) points out that these gardens serve as social spaces, combining food production with cultural expression, education, and community design. Gray et al. (2022) highlight how gardens in social housing areas can improve people's well-being and sense of community. This supports findings from Sharif & Ujang (2021), who say that community gardening builds stronger neighborhood ties and promotes social inclusion. From a governance standpoint, Ghose & Pettygrove (2014) describe community gardens as “spaces of citizenship,” where marginalized groups work to change their urban environments and exercise their civic rights. Similarly, Kanosvamhira & Tevera (2024) view these gardens as places of “quiet activism,” promoting food sovereignty through daily actions. Environmental care also plays a key role. Koekkoek (2021) shows how community gardeners develop local ecological ethics through shared upkeep and mutual responsibility. However, obstacles still exist. Wesener et al. (2020) point out important factors that can help or hinder the growth of urban gardens, such as land ownership issues, lack of support from institutions, and economic inequalities. Asl & Azadgar (2022) note the uneven spread of gardens in Tehran, which relates closely to socio-economic status. These various studies highlight the need to see community gardens as complex socio-ecological systems shaped by local contexts, policies, and collective efforts. Ferris et al. (n.d.) discussed the link between issues of health, education, community development and food security with the

[1] UCLG-ASPAC (United Cities and Local Governments Asia-Pacific) is a regional section of UCLG representing local governments across Asia and the Pacific. It promotes SDG localization, capacity building, and sustainable urban development.

use of green space in towns and cities. The article concludes that the use of urban open spaces for parks and gardens is closely associated with environmental justice and equity.

Method

This study employs a qualitative comparative case study approach to examine the ecological, social, and governance dimensions of community gardens in different urban contexts. Data were collected through document analysis, semi-structured interviews, and field observations. The interviews involved key actors from selected community garden initiatives, including Manuel, Chief of Miraflores Park in Seville, Spain, and local community gardeners Bu Sri Hastuti (Bu Utiq) and Pak Tri, Owner of Kebun Bu Utiq, in Sleman, Yogyakarta. Field observations were conducted at Miraflores Park and Kebun Bu Utiq to Examine land use, food production practices, waste management, and community participation.

Document analysis included academic journal articles, policy reports, and publications from organizations such as UCLG-ASPAC related to urban agriculture and sustainable development. These documents were used to identify patterns and compare the contributions of community gardens to environmental resilience, food security, social inclusion, and the role of non-state actors. The findings were analyzed thematically to eplore similarities and differences across cases and their implications for sustainable urban development in Bandar Lampung.

Results and Discussion

Urban community gardens have appeared worldwide as responses to environmental and social pressures in cities. In South Korea, rooftop gardens and local farming projects have been created not just for growing food, but also for healing, education, and inclusion. Kim et al. (2020) looked at rooftop gardens in welfare facilities as green spaces that offer therapeutic benefits, especially for marginalized groups. Park & Ahn (2013) highlighted Korea's changing institutional approach toward urban agriculture. Initially, urban farming was largely viewd as a recreational or small-scale household activity with limited policy attention. However, it has gradually evolved into a component of sustainable urban development, supported by formal policies that emphasize food secusity, environmental sustainability and community well-being. This shift reflects a broader governance approach that integrates urban agriculture into city planning and public welfare programs. These practices connect with increased civic engagement, where urban agroecology supports both ecological goals and community empowerment.

In Europe, especially in Spain, urban community gardens help with environmental protection, promoting organic food production and boost civic participation(Jordi-Sánchez & Díaz-Aguilar, 2021). These gardens provide environmental services, like enhancing biodiversity and regulating microclimates, that go beyond food. Miraflores Park located in Seville is an oversized piece of urban agriculture that has been developed with the community's participation in mind. Based on an interview with Manuel, Chief of Miraflores Park, it fosters ecological education, food production, social inclusion, and sustains the community. It integrates community gardens, conserves biodiversity, and citizen participation. Miraflores is the land was just unused land in the middle of the city, added Manuel. It is a model of sustainable land reuse and urban regeneration. During the interview, Manuel also informed, the harvest from Miraflores is used to meet family food security through a sharing system, not for sale. Miraflores is also a city ecotourism site in Seville. Urban farming as a key part of sustainable city planning, creating chances for citizens to lead ecological efforts(Grochulska-Salak, 2019). These projects reflect

global trends, showcasing urban agriculture's role in food security, green infrastructure, and participatory governance(Khan et al., 2024; Teoh et al., 2024).

Singapore represents a more organized approach where government-supported urban farming combines food security with environmental innovation. Policy frameworks have strong contributions to vertical and rooftop farming as effective land-use strategies(Low, n.d.). Lucena & Massuia (2022) noted that these systems help in climate mitigation by cutting transport emissions. At the same time, urban agriculture's benefits for mental health and the environment, including reducing stress, improving air quality, and boosting urban biodiversity(Nicholas et al., 2023).

Despite differences in governance models and local contexts, these cases reveal several common patterns. Community gardens consistently contribute to food security, environmental resilience, and social inclusion through community participation and the reuse of urban spaces. However, each city demonstrates different approaches, Singapore emphasizes strong policy support, Seoul promotes technological and rooftop farming innovations, Seville highlights community participation and ecological education, while Yogyakarta illustrates the importance of grassroots initiatives. These experiences suggest that successful community gardens require not only favorable environmental conditions but also collaborative governance involving multiple stakeholders. For Bandar Lampung, these cases provide important lessons on integrating community gardens into urban planning through active community engagement and support from non-state actors.

The environmental and social functions of community gardens can also be understood through the frameworks of the SDGs, Particularly those related to food systems, urban sustainability, and climate action. The environmental and social roles of community gardens can also be seen through the lens of the Sustainable Development Goals (SDGs), especially SDG 2 (Zero Hunger), SDG 11 (Sustainable Cities and Communities), and SDG 13 (Climate Action). Community gardens help achieve SDG 2, particularly Targets 2.1 and 2.4, by improving access to healthy food and encouraging sustainable food production through local urban farming. They also support SDG 11, especially Targets 11.3 and 11.7, by turning unused land into inclusive green spaces that promote community involvement and enhance access to safe public areas. Additionally, community gardens aid SDG 13, especially Targets 13.1 and 13.3, through practices that adapt to climate change, boost environmental awareness, support composting, protect biodiversity, and lessen urban heat impact. These various functions show how community gardens link local efforts with larger global sustainability goals.

SDG	Relevant Targets	Contribution of Community Gardens
SDG 2: Zero Hunger	Target 2.1: Ensure access to safe, nutritious, and sufficient food. Target 2.4: Promote sustainable food production systems and resilient agricultural practices.	Community gardens increase local food production, improve household food security, and encourage sustainable urban agriculture practices.
SDG 11: Sustainable Cities and Communities	Target 11.3: Enhance inclusive and sustainable urbanization and participatory planning. Target 11.7: Provide universal access to safe, inclusive, and accessible green and public spaces.	Community gardens transform underutilized land into inclusive green spaces, strengthen social interaction, and promote community participation in urban development.

SDG 13: Climate Action	Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards. Target 13.3: Improve education, awareness, and institutional capacity on climate change mitigation and adaptation.	Community gardens support climate adaptation through biodiversity conservation, composting practices, waste reduction, and mitigation of urban heat island effects while fostering environmental awareness among communities.

Table 1. Community Gardens Contributions to SDGs

Community gardens are attributed to increasing environmental resilience, social equity, as well as contributing towards the strengthening of food systems making them critical to sustainable urban development. They foster urban biodiversity, contribute to carbon sequestration, and help alleviate local climate stress which serves as a nature-based approach to urban eco-infrastructure. Socially, these gardens create and improve neglected spaces into multifunctional public areas and advance spatial justice and community identity while aiding post-disaster socioecological recovery. On the other hand, community gardens enable vulnerable groups to access fresh produce and act as buffers during supply chain interruptions which helps to address food access inequities, albeit, equitable access and distribution remains a challenge.

Urban Agriculture in Tropical and Four-Season Cities: A Comparative Perspective

Cities in temperate or four-season climates often face challenges in urban agriculture due to seasonal changes, including harsh winters, shorter growing seasons, and less biodiversity during colder months(Caputo et al., 2023; Clarke et al., 2019). These seasonal issues can result in lower productivity, higher maintenance costs, and uneven participation in community garden projects. In contrast, tropical countries enjoy advantages like year-round sunlight, rainfall, and warm temperatures. This consistent climate allows for continuous farming, greater crop variety, and ongoing community involvement(Kusumanagari & Ellisa, 2021; Sia et al., 2023). This situation presents an opportunity for tropical cities to excel in urban greening, food sovereignty, and climate adaptation by implementing urban farming more effectively. Research from different urban areas has shown the many benefits of community gardens in addressing environmental issues and boosting resilience. Community gardens serve as important ecological spaces in crowded cities, helping to regulate microclimates and conserve biodiversity. Similarly, community gardens in urban neighborhoods can produce a significant amount of food, up to 2.2 kg/m² yearly, with greater consistency in warmer climates(Lin et al., 2024). Additionally, community gardens provide nature-based solutions for urban sustainability, offering ecosystem services like carbon capture, air cleaning, and stormwater management, all of which can function year-round in tropical areas without disruption(Cabral et al., 2017).

The experiences of Singapore, Seoul, Rosario, and Yogyakarta offer valuable lessons for Bandar Lampung, which is the main focus of this study. While these cities have different governance structures and unique local situations, they show how community gardens can improve environmental resilience and food security when backed by inclusive planning and collaboration among stakeholders. Bandar Lampung, as a tropical city with year-round growing conditions, has the right environment to adopt similar methods and incorporate community gardens into sustainable urban development strategies.

Singapore serves as a relevant example of a tropical city that incorporates urban farming into its national resilience strategies. Singapore's urban gardening programs significantly improve the city's livability, lessen urban heat islands, and strengthen community bonds(Sia et al., 2023). Combining these lessons with insights from Seoul, Christchurch, and South Africa illustrates that tropical cities are not only well-suited to their climate but also positioned to lead in sustainable urban change through community garden models that can scale and include diverse populations(Kanosvamhira & Tevera, 2024; Wesener et al., 2025). In the context of community-driven urban agroecology, the case of Bu Sri Hastuti or Bu Utiq and Pak Tri shows how grassroots actors can change marginal urban land into a productive ecological space. Similar to the development of Miraflores Park in Seville, which turned unused urban land into a community space, the case of Bu Sri Hastuti (Bu Utiq) and Pak Tri in Sleman, Yogyakarta shows how community efforts can restore marginal land. The difference is its movement, Kebun Bu Utiq at first, residents used the site as an informal dumping ground. Over time, the area was cleaned up, organic waste was composted, and vegetables and other crops were grown for household use. For Miraflores, the land is the unused government land. These actions transformed the site into a productive ecological space that supports local food sovereignty, promotes environmental education, and encourages community involvement. Their work contributes to local food sovereignty and organic waste management. It also supports inclusive stewardship and environmental education in the community, which ties into larger sustainability and resilience goals.

By including community gardens in urban planning, the city can boost local food production, lessen its dependence on food imports, and strengthen urban resilience. Inspired by Seoul and Singapore, this effort would foster low-energy, high-yield food systems based on agroecological principles(Caputo et al., 2023; Nicholas et al., 2023). Rooftop and neighborhood composting models, like those in South Korea and Florida, have shown they can recycle up to 85% of garden and food scraps(S.-H. Kim et al., 2012; Moore et al., 2013). Such systems could work well in the dense urban areas of Bandar Lampung. At the same time, these gardens can act as community learning hubs, like South Korea's "Farm Clinics." They can engage residents, youth, and schools in sustainable practices and environmental care(Gray et al., 2022; Hou, 2017). With help from organizations like UCLG-ASPAC, this initiative could be included in local development strategies, supporting several global agendas. This integrated model provides Bandar Lampung with a scalable, inclusive, and climate-aware approach to prevent urban food insecurity and environmental decline.

Role of Non-State Actors

Non-state actors, like UCLG-ASPAC, play a vital role in linking global environmental goals with local urban needs. They help translate policies, mobilize networks, and build capacity.

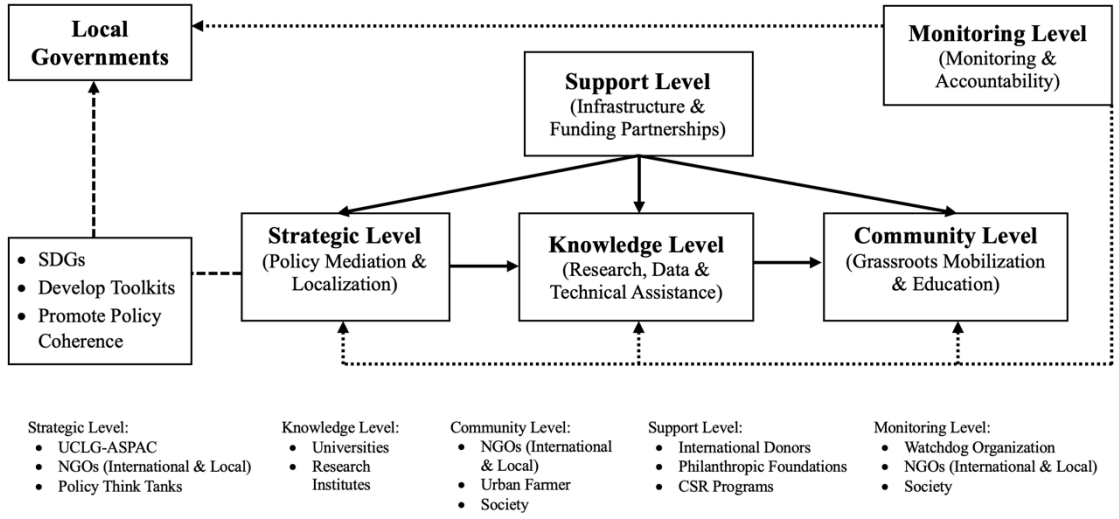

Figure 1. Model of Interaction between Non-State Actors

UCLG-ASPAC promotes the localization of the Sustainable Development Goals (SDGs) by assisting municipalities in Southeast Asia in adopting nature-based solutions, such as community gardens and urban farming. These actors provide essential technical support, governance guidance, and help with funding, especially in cities with limited resources. Although the interaction model illustrates UCLG-ASPAC separately from local governments, the relationship should not be interpreted as hierarchical. As a regional network, UCLG-ASPAC does not operate under local governments, nor does it exercise authority over them. Instead, it functions as a facilitating institution that supports municipalities through knowledge sharing, capacity building, and the promotion of SDG localization. Therefore, the relationship between UCLG-ASPAC and local governments is collaborative rather than subordinate. For example, UCLG-ASPAC has created toolkits and policy frameworks that connect urban agriculture practices with SDGs 2 (Zero Hunger), 11 (Sustainable Cities), and 13 (Climate Action) using inclusive and participatory governance models. This matches findings from Cabral et al. (2017), who stress that multifunctional green infrastructure, like urban gardens, must be integrated into urban planning through collaboration at multiple levels, including the involvement of non-state actors to aid climate adaptation, biodiversity, and public health.

Research also shows that NGOs, academic institutions, and community-based organizations are crucial for running and maintaining community gardening projects. These groups help ensure continuity, particularly when municipal policies change or when state capacity is limited(Clarke et al., 2019). Universities has a role to provide data-driven insights and engage in participatory research, improving the productivity and fairness of garden networks(Caputo et al., 2023; Gatson et al., 2022). In Seoul and Singapore, non-state actors have promoted training programs for gardens, build a community to educate people, developed rooftop farms, and initiated carbon monitoring efforts that directly affect environmental measures like CO_2 absorption and waste reduction(S.-H. Kim et al., 2012; Sia et al., 2023). In some cities also reported that civil society has led the effort to convert vacant lots into urban commons, enhancing both

ecological care and civic engagement. These contributions show that non-state actors are crucial for turning global sustainability frameworks into real, community-based practices that cities like Bandar Lampung could follow.This model is integrating community gardens into sustainable urban systems starting at the strategic level, where global frameworks are adapted through collaboration among stakeholders. Organizations like UCLG-ASPAC, international NGOs, and policy think tanks help municipal governments translate sustainability goals, such as the SDGs and Nature-Based Solutions, into city-level agricultural policies(Cabral et al., 2017; Clarke et al., 2019). Strategic level also needs to engage with Knowledge level to produces scientific data and conduct feasibilities studies. At the same time, universities and research institutes, generate important data on urban agriculture's environmental performance. This includes its ability to calculates carbon emissions, divert waste, and enhance biodiversity(Caputo et al., 2023; Lin et al., 2024). Knowledge level engages residents through workshops, stewardship programs, and educational activities on relevance programs. These scientific efforts shape agroecological guidelines and tools like data dashboards.

At the community and support levels, grassroots networks and donors play another key roles in implementation. Community level encourages participation across generations and society, fostering long-term ecological awareness(Koekkoek, n.d.). At the same time, philanthropic foundations, CSR programs, and international donors provide funding and infrastructure, such as vertical gardens, rainwater systems, and mobile composters. This support helps enable decentralized urban gardening(Kusumanagari & Ellisa, 2021; Lucena & Massuia, 2022). These partnerships are crucial for replicating scalable, low-cost innovations that cut waste and emissions, as seen in projects like Rosario's water-efficient gardens(Couretot et al., 2022).

The monitoring level ensures accountability, transparency, and feedback into the policy cycle. Watchdog groups, NGOs and society track the ecological and social outcomes of urban farming(Di Pietro et al., 2018; Seitz et al., 2022). They monitor and evaluate the sustainable based implementation. This monitoring supports responsive urban governance and empowers communities to influence sustainable development. Finally, standardizing gardens improves policy coherence, resource allocation, and long-term sustainability, positioning community gardens as vital components in inclusive, climate-resilient urban ecosystems.

Conclusion

Community gardens are not just extra greening projects; they are essential for sustainable urban change. They respond to urban challenges like environmental damage, social fragmentation, and weak food systems. Community gardens offer various solutions. They improve ecological resilience by promoting biodiversity, regulating microclimates, and lowering emissions through composting and carbon storage. Socially, they reclaim underused spaces, make green infrastructure accessible, and foster a sense of belonging and empowerment in marginalized communities. From policy to grassroots efforts, urban agriculture involves a network of non-governmental groups, academic institutions, charities, and global coalitions like UCLG-ASPAC. These groups help to localize sustainability goals, share knowledge, and build capacity. The warm climate in cities like Bandar Lampung boosts the potential of these gardens, allowing for year-round food production and ongoing civic participation. Learning from successful examples, such as rooftop farms in Seoul and vertical agriculture in Singapore, the addition of urban gardens to city planning is a cost-effective approach that can have a significant impact. It tackles urban food insecurity and environmental issues while supporting global initiatives like the Sustainable Development Goals. Thus, community

gardens are crucial, adaptable, and participatory methods for creating inclusive, climate-smart cities.

Bibliography

Asl, S. R., & Azadgar, A. (2022). The spatial distribution of urban community gardens and their associated socio-economic status in Tehran, Iran. *Frontiers in Sustainable Food Systems*, *6*. https://doi.org/10.3389/fsufs.2022.949075

Cabral, I., Costa, S., Weiland, U., & Bonn, A. (2017). *Urban Gardens as Multifunctional Nature-Based Solutions for Societal Goals in a Changing Climate* (pp. 237–253). https://doi.org/10.1007/978-3-319-56091-5_14

Caputo, S., Schoen, V., & Blythe, C. (2023). Productivity and Efficiency of Community Gardens: Case Studies from the UK. *Land*, *12*(1), 238. https://doi.org/10.3390/land12010238

Clarke, M., Davidson, M., Egerer, M., Anderson, E., & Fouch, N. (2019). The underutilized role of community gardens in improving cities' adaptation to climate change: a review. *People, Place and Policy Online*, *12*(3), 241–251. https://doi.org/10.3351/ppp.2019.3396732665

Couretot, J., Ottmann, G., & Lattuca, A. (2022). *Urban Agriculture as a Way to Address Social Inequalities From an Agroecological Approach, at Rosario, Santa Fé, Argentina* (pp. 151–169). https://doi.org/10.1108/S1057-192220220000026013

Di Pietro, F., Mehdi, L., Brun, M., & Tanguay, C. (2018). *Community Gardens and Their Potential for Urban Biodiversity* (pp. 131–151). https://doi.org/10.1007/978-3-319-72733-2_7

Egerer, M., Karlebowski, S., Conitz, F., Neumann, A. E., Schmack, J. M., & Sturm, U. (2024). In defence of urban community gardens. *People and Nature*, *6*(2), 367–376. https://doi.org/10.1002/pan3.10612

Ferris, J., Norman, C., & Sempik, J. (n.d.). *People, Land and Sustainability: Community Gardens and the Social Dimension of Sustainable Development*.

Gatson, S. N., Cisneros, M., Brown, R., Aitkenhead-Peterson, J. A., & Zhang, Y. Y. (2022). Urban Networks, Micro-agriculture, and Community Food Security. *Circular Economy and Sustainability*, *2*(3), 1253–1265. https://doi.org/10.1007/s43615-021-00117-x

Ghose, R., & Pettygrove, M. (2014). Urban Community Gardens as Spaces of Citizenship. *Antipode*, *46*(4), 1092–1112. https://doi.org/10.1111/anti.12077

Gray, T., Tracey, D., Truong, S., & Ward, K. (2022). Community gardens as local learning environments in social housing contexts: participant perceptions of enhanced wellbeing and community connection. *Local Environment*, *27*(5), 570–585. https://doi.org/10.1080/13549839.2022.2048255

Grochulska-Salak, M. (2019). *Urban Farming in Sustainable City Development* (pp. 43–64). https://doi.org/10.4018/978-1-5225-7958-8.ch003

Hou, J. (2017). *Urban Community Gardens as Multimodal Social Spaces* (pp. 113–130). https://doi.org/10.1007/978-981-10-4113-6_6

Kanosvamhira, T. P., & Tevera, D. (2024). Unveiling quiet activism: Urban community gardens as agents of food sovereignty. *Geographical Research*, *62*(3), 402–415. https://doi.org/10.1111/1745-5871.12661

Khan, M. M., Younis, A., Akram, M. T., Ijaz, M. M., & Al-Sadi, A. M. (2024). Feeding the cities: Urban agriculture for food security and sustainability of urban areas. *CABI Reviews*. https://doi.org/10.1079/cabireviews.2024.0053

Kim, J., Lee, S. Y., & Kang, J. (2020). Temperature Reduction Effects of Rooftop Garden Arrangements: A Case Study of Seoul National University. *Sustainability*, *12*(15), 6032. https://doi.org/10.3390/su12156032

Kim, S.-H., Yoon, S.-Y., Cha, M.-J., Yoo, H.-J., Cho, J.-Y., & Kim, Y.-S. (2012). A Study on Experimental Construction of Community Garden - A Case Study on Rooftop of SAHA Disabled Welfare House -. *Journal of the Korean Institute of Landscape Architecture*, *40*(2), 24–37. https://doi.org/10.9715/KILA.2012.40.2.024

Koekkoek, T. (n.d.). *"Dig in" to the roots of urban community gardening A study on environmental stewardship in community gardening initiatives*.

Kusumanagari, I., & Ellisa, E. (2021). Community garden as a way to achieve neighborhood scaled food security. *IOP Conference Series: Earth and Environmental Science*, *716*(1), 012064. https://doi.org/10.1088/1755-1315/716/1/012064

Lin, B. B., Bichier, P., Liere, H., Egerer, M., Philpott, S. M., & Jha, S. (2024). Community gardens support high levels of food production, but benefit distribution is uneven across the gardener community. *Sustainability Science*, *19*(6), 2013–2026. https://doi.org/10.1007/s11625-024-01558-7

Low, B. (n.d.). *Field Actions Science Reports Building sustainable urban farms with government support in Singapore*.

Lucena, L. P., & Massuia, F. M. (2022). The role of Singapore's modern urban agriculture in food security policy and the contribution of reducing CO2 emissions into the atmosphere. *Scielo*.

Modibedi, T. P., Masekoameng, M. R., & Maake, M. M. S. (2021). The contribution of urban community gardens to food availability in Emfuleni Local Municipality, Gauteng Province. *Urban Ecosystems*, *24*(2), 301–309. https://doi.org/10.1007/s11252-020-01036-9

Moore, A., Harder, A., & Samuel, N. (2013). Developing Urban Community Garden Projects. *EDIS*, *2013*(3). https://doi.org/10.32473/edis-wc139-2013

Nicholas, S. O., Groot, S., & Harré, N. (2023). Understanding urban agriculture in context: environmental, social, and psychological benefits of agriculture in Singapore. *Local Environment*, *28*(11), 1446–1462. https://doi.org/10.1080/13549839.2023.2238721

Park, J.-W., & Ahn, G.-B. (2013). The Current Status of the Korean Urban Farming Researched from an Institutional Perspective and Tasks for the Future. *Journal of Korean Society of Rural Planning*, *19*(3), 61–73. https://doi.org/10.7851/ksrp.2013.19.3.061

Sánchez, M., & Aguilar, A. L. (2021). Constructing Organic Food through Urban Agriculture, Community Gardens in Seville. *Sustainability*, *13*(8), 4091. https://doi.org/10.3390/su13084091

Seitz, B., Buchholz, S., Kowarik, I., Herrmann, J., Neuerburg, L., Wendler, J., Winker, L., & Egerer, M. (2022). Land sharing between cultivated and wild plants: urban gardens as hotspots for plant diversity in cities. *Urban Ecosystems*, *25*(3), 927–939. https://doi.org/10.1007/s11252-021-01198-0

Sharif, S. M., & Ujang, N. (2021). Community gardening and the capacity to enrich social bonding in urban neighborhoods. *IOP Conference Series: Earth and Environmental Science*, *737*(1), 012061. https://doi.org/10.1088/1755-1315/737/1/012061

Sia, A., Tan, P. Y., & Er, K. B. H. (2023). The contributions of urban horticulture to cities' liveability and resilience: Insights from Singapore. *PLANTS, PEOPLE, PLANET*, *5*(6), 828–841. https://doi.org/10.1002/ppp3.10377

Teoh, S. H., Wong, G. R., & Mazumdar, P. (2024). A review on urban farming: Potential, challenges and opportunities. *Innovations in Agriculture*, *7*, 1–11. https://doi.org/10.3897/ia.2024.127816

UCLG-ASPAC. (n.d.). *Local Government Associations - UCLG ASPAC*. Retrieved July 28, 2025, from https://uclg-aspac.org/policy-research/local-government-associations/

Wesener, A., Davis, S., & Chen, G. (2025). Strategic Spatial Opportunities for Local Food Distribution: Urban Accessibility of Community Gardens in Christchurch, Aotearoa New Zealand. *Urban Planning*, *10*. https://doi.org/10.17645/up.9566

Wesener, A., Fox-Kämper, R., Sondermann, M., & Münderlein, D. (2020). Placemaking in Action: Factors That Support or Obstruct the Development of Urban Community Gardens. *Sustainability*, *12*(2), 657. https://doi.org/10.3390/su12020657