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URBAN AGRICULTURE: A PATHWAY TO SUSTAINABLE URBAN DEVELOPMENT

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Abstract

This study explores the stakeholders' perspectives in urban agriculture (UA) toward sustainable urban development, expanding the discussion on the social, economic, and environmental potential and its challenges, thereby proposing a framework of action plans to support UA. Grounded on stakeholder theory, this study employed a qualitative approach using semi-structured interviews. A total of 15 stakeholders were selected from different authority levels in Malaysia consisting of the Department of Agriculture Malaysia and PLANMalaysia (federal level), Department of Agriculture Perak (state level), Subang Jaya City Council (local level), private property managers (real estate practitioners) and academicians (university). These stakeholders were top management, practitioners, and officers with the related background, knowledge, and experience in urban agriculture, urban planning, and real estate. The findings illustrate a framework of actionable plans centred on social, economic, environmental, policy, and technological innovation to highlight the importance of strategic initiatives in UA toward sustainable urban development. This framework contributes to the existing knowledge by proposing action plans based on sustainability pillars to advance UA as a pathway toward sustainable urban development. This study provides helpful strategies for policymakers and urban planners and guides them in making effective action plans for UA.

Keywords: Sustainable development, Stakeholder Perspective, Urban Agriculture

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INTRODUCTION

Rapid urbanisation strains food supply, quality of life, and the urban environment, escalating living costs and impacting community well-being (Marzuki and Jais, 2020; Ramaloo et al., 2018). Addressing these pressing issues requires effective urban planning strategies to enhance sustainability. UA emerges as a crucial tool to tackle these challenges, fostering community networks and aiding individual recovery while bolstering cities' adaptive capacity. By incorporating sustainability principles, UA offers numerous benefits, such as creating green spaces, reducing carbon emissions, enhancing food security, promoting social interactions, facilitating education and skill development, and improving aesthetics (Lin et al., 2017; Ayoni et al., 2022). However, widespread implementation of UA seems insufficient due to inadequate cooperative efforts and strategic planning.

Malaysia has great potential to support sustainability through UA, but a clear development plan is lacking. This situation is mainly due to limited space, resources, and inadequate education about UA (Islam and Chamhuri, 2012). Ishak et al. (2022) also point out that land scarcity is a major barrier to UA, particularly in Kuala Lumpur.

Integrating UA practices into urban planning strategies can stimulate sustainable city development. Yet, UA frequently operates independently, lacks integration into planning and policy frameworks (Lovelle, 2010), and poses complex challenges due to conflicting stakeholder goals (Huang et al., 2015). UA practices vary based on context, influenced by climate, culture, and the urban environment. Thus, local authorities may need to approach UA strategies differently, tailoring them to the local community. Although numerous studies have examined UA's socio-economic factors, food security, and sustainability, there remains a need for further research to enhance UA strategies.

This study aims to explore stakeholders' views on UA concerning sustainable urban development. It expands the discussion by exploring UA's social, economic, and environmental opportunities and challenges and proposes a framework of action plans to support its implementation.

RESEARCH BACKGROUND

Definition of UA

Generally, UA refers to activities related to cultivating, processing, and marketing food and non-food products within urban and peri-urban settings. (Smit et al., 1996; Gallaher and Njenga, 2019).

Benefits and Challenges of UA

Since the 1980s, UA has served as a crucial survival strategy for feeding the urban poor in Tanzania (Briggs, J., 1991). Beyond food security, UA has gained recognition in West Africa as a solution to food shortages caused by economic

difficulties and climate challenges (Levasseur et al., 2007). However, Martellozzo et al. (2014) found that UA struggles to ensure vegetable self-sufficiency for urban residents, especially under economic pressures. Zhou et al. (2023) noted that campus UA can generate an income of TWD 200 weekly and be self-sufficient for small family needs. Numerous studies highlight the benefits of UA, including creating green spaces, reducing carbon emissions, enhancing food security, fostering social interactions, and promoting education and skill development (Lin et al., 2017; Ayoni et al., 2022). While UA is less economically efficient for food production in Taipei, it emphasises sociocultural impacts (Zhou et al., 2023). Although urban greening has attracted wealthier individuals to UA, it is primarily more appealing to lower-income groups. For instance, 70% of urban farmers in Kenya are low-income individuals who have intensified their efforts to cope with various challenges (Omondi et al., 2017). Research by Crush et al. (2017) indicates that even elite individuals engage in UA, reflecting its broad appeal across income levels. While UA is generally well-received in Malaysia, community participation remains low and uncertain due to negative attitudes and socio-economic barriers, especially among low-income groups. Additionally, the widespread adoption of UA practices faces several challenges, summarised in Table 1.

Table 1: Challenges of UA

Authors	UA Challenges
Gunasiri et al. (2021), Huang et al. (2015)	Difficulty integrating into urban planning policies
Simon (2023), Lovell (2010), Kaufman (2007)	Disconnected and isolated initiatives
Ishak et al. (2022), Ali and Srivastava (2017)	Huge cost
Ishak et al. (2022), Gunasiri et al. (2021), Low (2019)	Land issues & limited land space
Gunasiri et al. (2021), Chenarides et al. (2020)	Human-related & poor community engagement
Ishak et al. (2022), Rahim (2014)	Climate change
Ishak et al. (2022), Rahim (2014)	Risks in pests, diseases
Pourjavid et al. (2013)	Lack of education and awareness
Veenhuizen. V and Danso (2007)	Challenges in access to water

Source: Authors (2024)

Governance challenges often obstruct the integration of UA into urban planning policies (Gunasiri et al., 2021; Huang et al., 2015). In the U.S., there is no comprehensive analysis of the various UA policies across cities (Halvey et al., 2021). In Malaysia, while the Urban Community Garden Policy aims to promote UA, its implementation remains non-mandatory, relying primarily on community

initiatives. The practice of UA has historically been fragmented and isolated, leading to conflicts among stakeholders due to differing values and interests (Simon, 2023; Lovell, 2010; Kaufman, 2007). This disconnect emphasises the need for understanding stakeholder roles and governance procedures to enhance participatory urban planning. High costs also present significant barriers to community engagement in UA, particularly regarding irrigation expenses (Ishak et al., 2022). Limited financial, technological, and institutional support hinders large-scale UA in countries like India (Ali and Srivastava, 2017). In Singapore, space shortages and a complex regulatory framework further complicate access to land for urban farmers (Low, 2019; Ishak et al., 2022; Gunasiri et al., 2021). Comparatively, Malaysia's UA efforts remain community-driven and non-mandatory. A potential solution is to incorporate UA into formal policies, similar to Cape Town, which has a dedicated UA policy that supports resource provision, land access, and training (City of Cape Town, 2007). Promoting partnerships between private landowners and the government could also enhance UA initiatives by allowing land leasing for farming purposes. Significant human-related challenges persist in developing countries, where economic concerns often take precedence. Communities typically lack information on cultivation, marketing, and market demand, highlighting the urgent need for training and foundational knowledge in UA. Collaborative efforts among stakeholders are essential to integrate UA into community culture, as practices may vary based on unique local conditions and environments.

Sustainable Development Goal (SDG 11): Sustainable Cities and Communities

As urban populations grow, SDG 11 aims to ensure that urban areas are able to cater to this expansion while improving living conditions and reducing the environmental impact of cities. Thus, making cities inclusive, safe, resilient, and sustainable. UA directly contributes to SDG 11 by promoting sustainable cities through green spaces, improving food security, and supporting community resilience and urban sustainability. By integrating UA into urban planning, cities can enhance their adaptive capacities, reduce their carbon footprints, and build healthier, more inclusive environments.

UA Development in Malaysia

Malaysia has significant potential for sustainability through UA, but the lack of an integrated development approach carries challenges, including limited space, resources, and education (Islam and Chamhuri, 2012). Ishak et al. (2022) identified land scarcity in Kuala Lumpur, along with unpredictable weather and financial issues, as major obstacles.

Strategic Efforts of UA: Experienced in Other Countries

Exploring strategies for UA by considering insights from successful practices in other countries is essential. The following Table shows the strategy efforts of UA carried out based on various countries:

Table 2: Strategic Efforts of UA based on various countries

Authors	**Merkle (2023)**	**Merkle (2023), Butturini and Marcelis (2019)**	**Merkle (2023), Junqian (2011)**	**Silbiger et al. (2022)**	**Silbiger et al. (2022)**
UA Strategies	**Germany Hugo Biomass Park Belvedere Park**	**France City of Paris Sports Hall Vignoles**	**China Shanghai**	**Canada City of Mississauga**	**US City of Boston**
Education & training	✓	✓		✓	
Roles of stakeholders	✓			✓	
Technology advancement	✓	✓	✓		
Engagement multiple stakeholders	✓				
Rejuvenate areas	✓				
Prioritise environmentally-friendly cultivation method		✓	✓		
Rooftop garden	✓	✓	✓		
Promote, support, and enable inclusive, culturally relevant	✓	✓	✓	✓	
Support individuals, communities, and local businesses in developing creative ideas to expand local food initiatives	✓	✓	✓	✓	
Proactive planning & implementation	✓	✓	✓	✓	✓

Source: Authors (2024)

Sustainability Matrix in UA

As Table 3 shows, social, economic, environmental, policy, and innovative factors are essential to urban sustainability to ensure UA's long-term sustainability and viability in creating sustainable cities.

Table 3: Sustainability Matrix in UA

UA based on Sustainability Pillars	**Authors**					
	Kafle, Hopeward and Myer (2023)	**Yoshida et al. (2019)**	**Clerino & Lelievre (2020)**	**Ding et al. (2020)**	**Azunre et al. (2019)**	**Mengual et al. (2019)**
Social						
▪ Human health benefits		●				
▪ Community development		●				
▪ Educational benefit		●	●			

UA based on Sustainability Pillars	Authors					
	Kafle, Hopeward and Myer (2023)	**Yoshida et al. (2019)**	**Clerino & Lelievre (2020)**	**Ding et al. (2020)**	**Azunre et al. (2019)**	**Mengual et al. (2019)**
▪ Providing local foods ▪ Employment ▪ Social capital		 ●	● ●	● ●		
Economic ▪ Business strategy ▪ Offer low transportation cost	●	 ●				
Environmental ▪ Greening ▪ Boosting biodiversity ▪ Improving natural resource		● ● ●		●		
Policy ▪ Land use planning and zoning					●	
Innovation and Technology ▪ Innovative technique of UA						●

Source: Authors (2024)

Stakeholder Theory

Freeman's Stakeholder Theory (2015) emphasises that organisations should consider the interests of all stakeholders, not just their own. In this study, key stakeholders in Malaysia include the Department of Agriculture, PLANMalaysia, local councils, private property managers, and academicians, all contributing their expertise in urban agriculture and planning. Government agencies focus on policy-making and resource allocation, private property managers engage the community, and academicians provide education. Effective collaboration among these stakeholders is essential for advancing urban agriculture and sustainable urban development.

RESEARCH METHODOLOGY

This study was exploratory in nature. Thus, considering the lack of empirical research in this field, a qualitative approach was employed to explore experts' views, experiences, and insights on UA toward sustainable urban development.

Research Context

Given the importance and potential of UA in Malaysia, this study aims to explore the perspectives of 15 stakeholders across federal, state, and local levels (agricultural directors and officers, urban planners), property managers, and academicians focusing on key aspects of UA, including its various benefits and challenges. The study identifies strategic actions needed to address these gaps and enhance UA's contribution to sustainable city development.

Sample

This study engaged 15 stakeholders, including agricultural directors and officers at federal, state, and local levels, urban planners, private property managers, and academicians. Informants were selected through purposive sampling, focusing on those with over three years of experience in UA. Expert interviews, deemed effective for exploratory research (Bogner, Littig, & Menz, 2009), were conducted via email, phone, and in-person from February 2 to March 18, 2024. The interview demographic comprised two property managers, six agricultural stakeholders, one local authority representative, three urban planners, and three academicians. Details of the informant criteria are provided in Table 4.

Table 4: Basic Data of Informants

Level	Organisation	Type of Informant	Numbers of Informants	Background	Inclusion criteria
Federal	Department of Agriculture Malaysia	Agricultural Directors, Assistant Directors	5 (R1, R2, R3, R4, R5)	Agricultural Officer, 3- 15 years experience	These stakeholders were top management, practitioners, and officers with related backgrounds, knowledge, and experience in urban agriculture, urban planning, real estate, and green campus committees.
	PLANMalaysia	Urban Planners	3 (R6, R7, R8)	Urban Planner, 3-15 years experience	
State	Department of Agriculture Perak	Agricultural Officer	1 (R9)	Agricultural Officer, 17 years experience	
Local	Subang Jaya City Council	Senior Assistant Director Town and Country Planning Department	1 (R10)	Senior Assistant Director Town and Country Planning Department; 23 years experience	
Practitioner (Real Estate)	Private Property Managers	Property Managers	2 (R11, R12)	Property Manager and Registered Property Manager; 10 years experience	
Academicians	Universiti Teknologi MARA Perak Branch	Lecturer	3 (R13, R14, R15)	PhD Qualification, 18-24 years experience, Green University Campus Committee	

Source: Authors (2024)

Data Analysis

The transcripts were prepared for thematic analysis to identify the data's patterns, themes, and categories. This step involved familiarising with the data, generating codes, searching for themes, reviewing and naming them, and producing a report. The researcher manually analysed the data using inductive and deductive methods to uncover new themes. Triangulation of data from different authority

levels ensured reliable insights into UA's potential for sustainable urban development.

ANALYSIS AND DISCUSSION

UA Issues and Challenges

The research findings align with prior studies highlighting that UA faces various challenges, including planning policy issues, unclear initiatives, high operating costs, limited land, and community engagement obstacles (Gunasiri et al., 2021; Huang et al., 2015; Simon, 2023; Lovell, 2010; Kaufman, 2007; Ishak et al., 2022; Pourjavid et al., 2013). Informants identified the most significant challenges as the costs of operating UA and the level of community commitment and participation. Mindset and time constraints within the community also play critical roles. Collaboration between stakeholders, especially government agencies and organisations, is crucial for addressing these high-cost issues. Informants emphasized the need for affordable technological innovations and grants to support suitable innovations. Additionally, community leaders should foster commitment and organise regular programs to enhance participation in UA. Some agricultural sector informants and urban planners pointed out that policy challenges, such as the lack of a dedicated act and limited land, significantly affect UA. Overcoming these challenges requires collaboration among government and relevant agencies, introducing incentives, promoting strong community commitment, and enacting supportive legislation to advance inclusive and sustainable UA.

UA Benefits

During the interview process, most stakeholders recognised that UA provides multiple advantages and diverse opinions. Informant R13 mentioned that implementing UA provides many benefits to the local community. If there is support from all parties, the implementation of UA can be used as a side income, health the body, and strengthen the relationship between local communities. Informant R9 stated that UA can reduce house-living expenses while producing safe-to-eat crops that can be sold to the local community. Based on their practical experience, households can plant and sell their cultivation in the market, reducing living costs significantly. Informant R14 added that UA is acknowledged for fostering social bonds among community members and acting as an approach to increasing local community involvement. This opinion also aligns with informant R11 who mentioned that UA can be used as a group activity and sharing the crops.

Proposing Strategic efforts to implement UA toward sustainable urban development

This study analyses and incorporates recommendations from informants into frameworks using NVIVO version 14, as illustrated in Figure 1. These proposed

frameworks are designed to be practical and adaptable for policymakers, potentially employing a phased implementation approach. The initial phase may concentrate on immediate actions like stakeholder engagement, followed by program development in the next phase, and concluding with evaluation in subsequent stages.

Economic

In the economic pillar, community awareness and understanding of the benefits of UA and its significance as a business opportunity platform are significant strategic efforts suggested by informants R10 and R13 points of view. Other strategic efforts can include organising classes, training sessions, and coaching by successful participants in UA. Providing marketing skills courses is another viable initiative stated by R11. Additionally, effective use of digital and media platforms can increase awareness and interest in UA, thereby expanding the market effectively. To establish UA as a viable business opportunity platform, the role of community leaders and government agencies is crucial in delivering comprehensive information about UA and ensuring community awareness.

"Local market centres could be created through UA, offering various products at affordable prices to generate profound interest in UA as a business opportunity." (R9)

This initiative aims to enlighten and engage the community. A study by Islam and Chamhuri (2012) also highlighted that interactive and participatory approaches at the community level should be implemented to foster a sense of ownership among community members. This should be reinforced through the coordination roles by various stakeholders, ensuring collective support and engagement in the process. Sharing success stories of urban gardening, both within and outside the country, through knowledge-sharing sessions can also be beneficial, as suggested by R13. As we know, urban land use is highly competitive with various development activities. Therefore, strategic efforts to overcome limited land availability, including implementing knowledge sharing in vertical farming, hydroponic cultivation, and expanding land use for UA, are helpful.

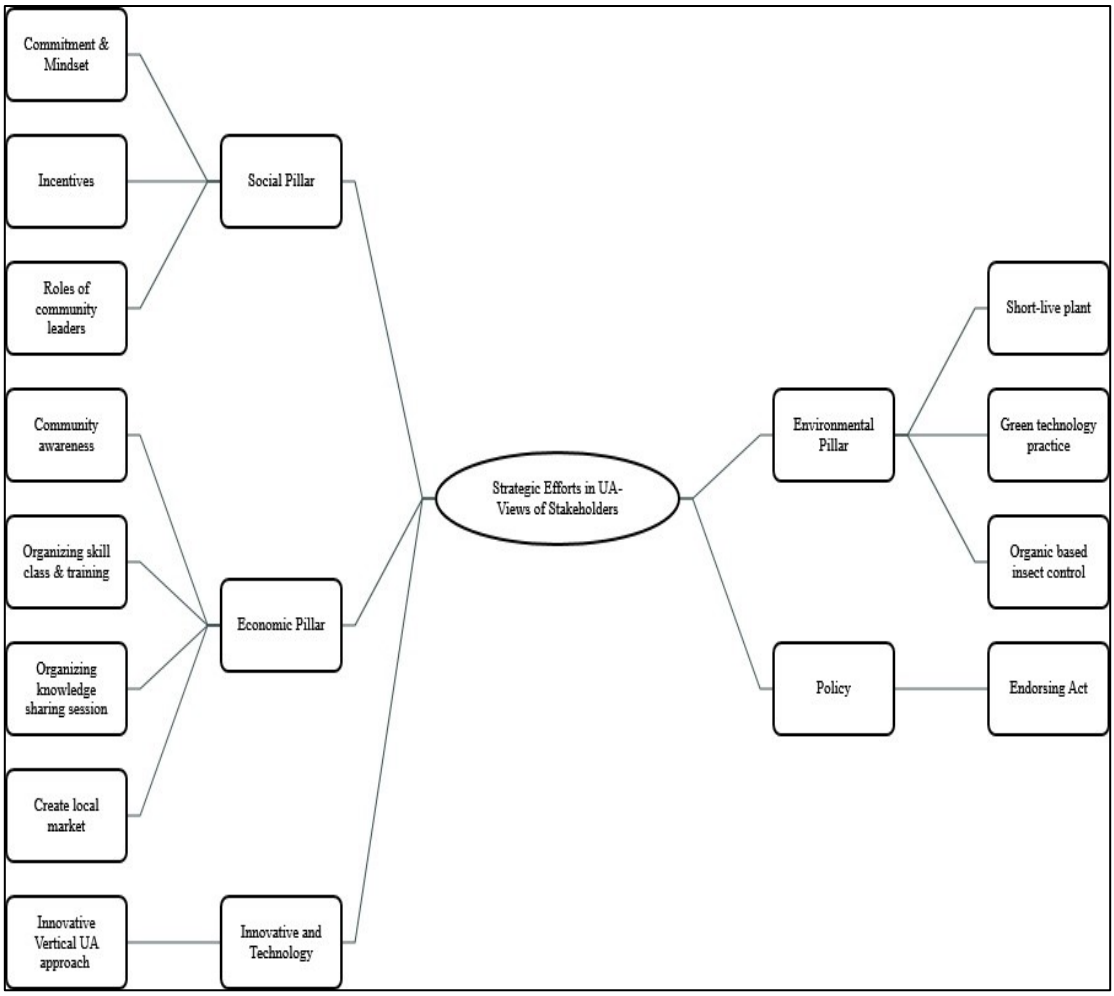

Figure 1: Framework of stakeholders' viewpoints on strategic efforts that could be implemented in UA.
Source: Authors (2024)

Social

On the social aspect, community participation and commitment are crucial in implementing and ensuring UA's success, thus contributing towards sustainable cities.

"Commitment and mindset are essential to ensure continuous involvement in UA." (R1, R2, R9, R10, R11, R12, R13, R14, R15)

All in all, commitment and mindset are important aspects of ensuring participation and involvement in UA. Without these, UA cannot be sustained. Therefore, most stakeholders agreed that establishing activities and awareness of UA is essential. In fact, community leaders also play a significant role in holding a regular program to encourage collective community involvement in UA activities. Through this, continuous UA activities could be established, incentivising informants to quickly garner interest and commitment from the community in engaging in UA (R14).

Environmental

In terms of environmental aspects, UA faces challenges with unpredictable climate conditions and environments. Securing clean water sources also becomes a matter of concern. Therefore, realising urban sustainability through UA implementation poses significant challenges. Hence, R9 and R13 proposed several aspects to address this issue. To cope with uncertain climates, prioritising the selection of short-lived plants and choosing suitable locations is essential. Additionally, the use of greenhouses and green technology practices was suggested the most by stakeholders (R3, R9). Insect control is also crucial to ensure a safe environment and food sources. Informants R2 and R9 also recommend the use of organic-based insect control.

Policy

Regarding policies to further encourage UA, informants have proposed several recommendations. For example, R10 from the local authority recommended formulating a specific federal, state, and local policy regarding the necessity of UA. This aligns with Prové (2018) findings, which indicated that a well-designed multi-level governance system would boost local actors' involvement in UA policymaking and help establish UA as a distinct policy entity across different governance levels. Other informants mentioned this:

"Government needs to study this policy and local authority suggested needs to work hard in realising UA." (R13)

"Attractive programs in UA should be implemented to attract community interest through establishing cooperation or model UA/successful UA to be exposed to the communities." (R9)

By interpreting this, it is found that endorsing Acts is crucial to fostering and realising the growth of UA. In Madison, US, UA has implemented a zoning ordinance on its land use plan to encourage community gardens in the city. Besides that, Taiwan has established successful policies such as Taipei Beautiful

and Taipei Garden City (Zhou et al, 2023. As a result, many small and vacant lots were converted into edible gardens and gained great popularity.

Innovation & Technology

Incorporating innovative methods is essential for improving UA's overall sustainability. Therefore, among strategic efforts suggested by informants to overcome limited land availability include implementing hygrowpot linkTech, terraced planting technology, hydroponics, and expanding land use for UA (R1, R2, R3, R4, R5, R6, R9). The use of technology and innovation at minimal costs in UA activities is also an important aspect of encouraging the development of UA (R14). However, informant R11 suggested replacing existing trees that the developer planted with trees, fruits, and vegetables. According to informant R9, the agricultural department has offered UA many technologies and tools. However, it sometimes involves high cost. Therefore, collaboration in financial assistance from government agencies and related organisations is crucial to addressing high-cost issues, as suggested by R14. Grants from the relevant parties for developing suitable innovations are also encouraged (R14). Nevertheless, informant R13 underscored the importance of exposure to the community through briefing and training in technology and innovation skills from experts should be conducted to impart the latest advancements. As we know, urban land use is highly competitive with various development activities.

CONCLUSION

This study explores UA's challenges and benefits in contributing to sustainable development by considering the stakeholders' perspectives, thereby proposing action plans or strategic efforts to fill the gap and support UA for sustainable urban development. The objective is to propose actionable plans to support UA's progress, bridging knowledge gaps by developing a framework that emphasises social, economic, and environmental factors and other key factors such as innovation, technology, and policy. In terms of the theoretical implications, the findings of this study are consistent with previous research that highlights the importance of participation by all stakeholders to ensure a successful and sustainable UA. As for the practical implication, the findings of this qualitative study are to guide policymakers, industry practitioners, and educators in formulating effective policies and sustainable planning strategies that support the progress and growth of UA in sustainable development. The implications of this study also offer valuable insights for government authorities and urban planners in line with the pursuit of Sustainable Development Goals, Sustainable Cities and Communities (SDGs 11). This study is generally a pre-study conducted in the context of sustainable development and limited to the informants; further research could be carried out to explore strategies and interventions to the specific real estate and sustainable cities field that can promote collaborative synergies within

real estate planning development. While UA offers potential economic and social benefits, these are often unevenly distributed, with low-income areas facing more significant barriers to implementing UA. Future studies could explore the economic models that ensure the long-term viability of UA initiatives, examining funding mechanisms, market accessibility, and profitability in different urban environments. Additionally, researchers could focus on strategies to make UA more inclusive and accessible to marginalised groups, addressing issues like land tenure, resource access, and financial support.

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REFERENCE

Ali, F., & Srivastava, C. (2017). Futuristic urbanism: An overview of vertical farming and urban agriculture for future cities in India. *International Journal of Advanced Research in Science, Engineering and Technology*, *4*(4), 3767–3775.

Ayoni, V. D. N., Ramli, N. N., Shamsudin, M. N., & Abdul Hadi, A. H. I. (2022). Urban agriculture and policy: Mitigating urban negative externalities. *Urban Forestry & Urban Greening*, *75*, 127710. https://doi.org/10.1016/j.ufug.2022.127710

Azunre, G. A., Amponsah, O., Peprah, C., Takyi, S. A., & Braimah, I. (2019). A review of the role of urban agriculture in the sustainable city discourse. *Cities*, *93*, 104-119. https://doi.org/10.1016/j.cities.2019.04.006

Bogner, A., Littig, B., & Menz, W. (2009). Introduction: Expert interviews -An introduction to a new methodological debate. In A. Bogner, B. Littig, and W. Menz, (Eds.), *Interviewing experts* (pp. 1-13). Basingstoke: Palgrave Macmillan.

Briggs, J. (1991). The peri-urban zone of Dar es Salaam, Tanzania: Recent trends and changes in agricultural land use. *Transactions of the Institute of British Geographers*, *16*(3), 319-331.

Butturini, M., & Marcelis, L. F. M. (2019). Vertical farming in Europe: Present status and outlook.

Chenarides, L., Grebitus, C., Lusk J.L, Printezis, I. (2020). Who practices urban agriculture? An empirical analysis of participation before and during the COVID-19 pandemic. *Agribusiness*, *37*(1). https://doi.org/10.1002/agr.21675

City of Cape Town. (2007). *Urban agriculture policy for the city of Cape Town*. Government Printer.

Clerino, P., & Fargue-Lelievre, A. (2020). Formalizing objectives and criteria for urban agriculture sustainability with a participatory approach. *Sustainability*, *12*(18), 7503. https://doi.org/10.3390/su12187503

Crush, J., Frayne, B., & Mc Cordic, C. (2017). Urban agriculture and urban food insecurity in Maseru, Lesotho. *Journal of Food Security*, *5*(2), 33-42. https://doi.org/10.12691/jfs-5-2-3

Ding, X., Zhang, Y., Zheng, J., & Yue, X. (2020). Design and social factors affecting the formation of social capital in Chinese community gardens. *Sustainability*, *12*(24), 10644. https://doi.org/10.3390/su122410644

Freeman, R. E. (2015). Stakeholder theory. In *Wiley encyclopedia of management* (Vol. 2). Business Ethics.

Gunasiri Wadumestrige Dona, C., Mohan, G., & Fukushi, K. (2021). Promoting urban agriculture and its opportunities and challenges—A global review. *Sustainability*, *13*(17), 9609. https://doi.org/10.3390/su13179609

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*, 102013.

Huang, J., Tichit, M., Poulot, M., Darly, S., Li, S., Petit, C., & Aubry, C. (2015). Comparative review of multifunctionality and ecosystem services in sustainable agriculture. *Journal of Environmental Management*, *149*, 138–147.

Ishak, N., Abdullah, R., Mohd Rosli, N. S., Abdul Majid, H., Abdul Halim, N. S., & Ariffin, F. (2022). Challenges of urban garden initiatives for food security in Kuala Lumpur, Malaysia. *Quaestiones Geographicae*, *41*(4), 115-126.

Islam, R., & Chamhuri, S. (2012). The analysis of urban agriculture development in Malaysia. *Advances in Environmental Biology*, *6*(3), 1068-1078.

Junqian, X. (2011, June 1). Cultivating a novel way to grow food. *China Daily*.

Kafle, A., Hopeward, J., & Myers, B. (2023). Exploring trade-offs between potential economic, social and environmental outcomes of urban agriculture in Adelaide, Australia, and the Kathmandu Valley, Nepal. *Sustainability*, *15*(11), 11251. https://doi.org/10.3390/su151411251

Kaufman, J. L. (2007). Planning for the local food system in the United States. In R. H. G. Jongman (Ed.), *The new dimensions of the European landscape* (pp. 39–57). Springer. https://doi.org/10.1007/978-1-4020-2911-0_3

Levasseur, V., Kouame, C., Pasquini, M. W., & Ludovic, T. (2007). A review of urban and peri-urban vegetable production in West Africa. *Acta Horticulturae*, *762*, 245-252. https://doi.org/10.17660/ActaHortic.2007.762.23

Lin, B. B., Philpott, S. M., Jha, S., & Liere, H. (2017). Urban agriculture as a productive green infrastructure for environmental and social well-being. In P. Tan & C. Jim (Eds.), *Greening cities*. Springer. https://doi.org/10.1007/978-981-10-4113-6_8

Lovell, S. T. (2010). Multifunctional urban agriculture for sustainable land use planning in the United States. *Sustainability*, *2*(8), 2499–2522. https://doi.org/10.3390/su2082499

Low, B. (2019). Building sustainable urban farms with government support in Singapore. *Field Actions Science Reports*, *20*, 98–103.

Martellozzo, F., Landry, J.-S., Plouffe, D., Seufert, V., Rowhani, P., & Ramankutty, N. (2014). Urban agriculture: A global analysis of the space constraint to meet urban vegetable demand. *Environmental Research Letters*, *9*(6), 064025.

Marzuki, A., & Jais, A. S. (2020). Urbanisation and the concerns for food security in Malaysia. *Journal of the Malaysian Institute of Planners*, *18*(3), 202-217.

Merkle, R. (2023). *Concepts of urban and peri-urban agriculture in Europe and China and their potential contribution to food security and climate-resilient food production*. Sino-German Agricultural Centre (DCZ).

Omondi, S., Kosura, W., & Jirström, M. (2017). The role of urban-based agriculture on food security: Kenyan case studies. *Geographical Research*, *55*(2), 231-241. https://doi.org/10.1111/1745-5871.12234

Pourjavid, S., Sadighi, H., & Shabanali Fami, H. (2013). Analysis of constraints facing urban agriculture development in Tehran, Iran. *International Journal of Agricultural Management & Development*, *3*(1), 43–51.

Prové, C. (2018). *The politics of urban agriculture: An international exploration of governance, food systems, and environmental justice* (Doctoral dissertation, Ghent University).

Rahim S.A., (2014). *VIA of climate change on Malaysian agriculture systems: Current understanding and plans*. Universiti Kebangsaan Malaysia, Kuala Lumpur.

Ramaloo, P., Siwar, C., Liong, C. Y., & Isahak, A. (2018). Identification of strategies for urban agriculture development: A SWOT analysis. *Journal of the Malaysian Institute of Planners*, *16*(3), 320-331.

Silbiger, P. (2022). *Homegrown Mississauga urban agriculture strategy*. Mississauga.

Simon, S. (2023). The role of design thinking to promote a sustainability transition within participatory urban governance: Insights from urban agriculture initiatives in Lisbon. *Urban Governance*, *3*, 189–199.

Smit, J., Ratta, A., & Nasr, J. (1996). *Urban agriculture: Food, jobs and sustainable cities*. The Urban Agriculture Network, United Nations Development Programme.

Veenhuizen R.V and Danso, G. (2007). *Profitability and sustainability of urban and peri-urban agriculture*. Food And Agriculture Organization of the United Nations.

Yoshida, S., Yagi, H., Kiminami, A., & Garrod, G. (2019). Farm diversification and sustainability of multifunctional peri-urban agriculture: Entrepreneurial attributes of advanced diversification in Japan. *Sustainability*, *11*, 2887.

Zhou, Y., Wei, C., & Zhou, Y. (2023). How does urban farming benefit participants? Two case studies of the Garden City Initiative in Taipei. *Land*, *12*(1), 55. https://doi.org/10.3390/land12010055

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