Toward climate-smart urban agriculture in Palembang: A systematic review on strategies, trade-offs, and synergies

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Abstract. Urban agriculture is increasingly recognized as a strategic approach to addressing the intertwined challenges of food security, urban sustainability, and climate change. However, its contribution to food-system resilience and environmental sustainability is not inherently direct or uniform; rather, it is shaped by technological choices, governance arrangements, and the socio-economic capacity of urban communities. This article systematically reviews the strategies, trade-offs, and synergies associated with the development of climate-smart urban agriculture, with relevance to Palembang City, Indonesia. A systematic literature review was conducted using the PRISMA framework, drawing on bibliographic records from Google Scholar and Scopus. A total of 400 records were identified, comprising 200 from Google Scholar and 200 from Scopus. Following deduplication, 48 records were removed, leaving 352 unique records for the screening stage. The synthesis reveals five key contributions of urban agriculture: strengthening food security, improving resource efficiency, supporting climate-change adaptation, enhancing socio-economic empowerment, and enabling integration with sustainable urban governance. At the same time, several critical trade-offs were identified, including land scarcity, energy and water requirements, soil contamination risks, technological costs, and policy fragmentation. In the context of Palembang, this article proposes a climate-smart urban agriculture model that integrates household food gardens, low-cost hydroponics, aquaponics, community gardens, organic-waste management, and urban blue-green infrastructure. The review underscores that urban agriculture should not be positioned as a stand-alone solution, but rather as part of an inclusive, adaptive, and climate-resilient transformation of urban food systems.

1 Introduction

Urban agriculture has evolved from a household subsistence practice into an essential component of sustainable urban development agendas. In the twenty-first century, urban agriculture is no longer understood merely as a food production activity within urban spaces; rather, it has emerged as a multidimensional strategy associated with food security, the reduction of social vulnerability, climate change mitigation and adaptation, the utilization of limited urban space, the strengthening of local economies, and the improvement of urban ecological quality. Global literature demonstrates that urban agriculture contributes significantly to urban sustainability through the provision of locally produced food, the enhancement of ecosystem quality, the reinforcement of social networks, and the diversification of urban food systems [1].

This urgency has become increasingly pronounced in the aftermath of the COVID-19 pandemic, during which disruptions in food supply chains, rising food prices, and escalating climate-related risks significantly affected urban areas. Recent studies indicate that urban agriculture can enhance urban resilience in responding to food system disruptions, particularly through local food production, the utilization of productive urban spaces, and increased community engagement [2]. In the context of climate change, urban agriculture is also regarded as part of nature-based solutions, as it contributes to the reduction of urban microclimate temperatures, improvement of water infiltration, management of organic waste, and restoration of the ecological functions of urban spaces [3].

Nevertheless, the contribution of urban agriculture to food security and sustainability is not automatic. Numerous studies have demonstrated that its benefits are highly dependent on factors such as production scale, technological design, commodity type, land accessibility, water and soil quality, policy support, and local institutional capacity [4]. Intensive production systems, including vertical farming, rooftop greenhouses, and controlled environment agriculture, have the potential to increase productivity within limited spaces; however, they may also lead to higher energy

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consumption, greater investment costs, and increased technical complexity [5].

An important gap in the literature lies in the limited number of studies that explicitly examine the relationship between urban agriculture and the concept of the climate-smart city within the context of developing cities in Indonesia. Most existing studies continue to focus on large metropolitan areas, while discussions concerning intermediate and emerging cities in Southeast Asia remain relatively limited. Recent empirical studies from tropical lowland urban ecosystems in Indonesia have demonstrated that urban vegetable production systems are strongly influenced by shading intensity, cultivation methods, and microclimatic conditions, particularly for leafy vegetables such as Brazilian spinach [6]. In fact, cities such as Palembang possess distinct ecological, social, and spatial characteristics. Palembang is a river-based city that faces vulnerabilities related to flooding, the expansion of built-up areas, pressure on open spaces, and increasing food demand driven by rapid urban population growth.

The concept of climate-smart urban agriculture has become increasingly relevant in Palembang because it integrates three primary objectives: enhancing food productivity, strengthening climate change adaptation, and reducing the environmental impacts of urban food production systems. Unlike climate-smart agriculture in rural areas, climate-smart urban agriculture must address distinct urban challenges, including limited land availability, competition over spatial use, high technological costs, contamination risks, institutional fragmentation, and unequal access to production resources among urban communities.

This study aims to address three main research questions: (1) what strategies have emerged in the global literature concerning climate-smart urban agriculture; (2) what trade-offs should be considered in its implementation within developing cities such as Palembang; (3) what synergies can be developed to enable urban agriculture to simultaneously contribute to food security, climate adaptation, and urban resilience.

2 Methodology

2.1 Study design

This study employed a systematic literature review approach based on the PRISMA principles. A systematic review was selected because it enables a structured synthesis of the existing literature, facilitates the identification of thematic patterns, and maps research gaps within the field. In this study, the systematic review approach was applied to examine how urban agriculture is associated with food security, sustainability, climate change adaptation, urban resilience, and urban food system governance.

The literature data were obtained from two primary databases, namely Google Scholar and Scopus. Each database yielded 200 bibliographic records, resulting in a total of 400 initial articles. The identified publications covered the period from 2016 to 2026 to ensure the novelty and relevance of the selected literature.

2.2 Literature search strategy

The literature search strategy was designed to identify studies discussing urban agriculture in relation to sustainability and climate change. The primary keywords included urban agriculture, urban farming, peri-urban agriculture, vertical farming, rooftop farming, hydroponics, and aquaponics. These keywords were combined with food security, sustainability, urban resilience, climate resilience, climate change adaptation, and sustainable food system. The main search string applied was as follows:

("urban agriculture" OR "urban farming" OR "peri-urban agriculture" OR "vertical farming" OR "rooftop farming" OR "hydroponics" OR "aquaponics") AND ("food security" OR "sustainability" OR "urban resilience" OR "climate resilience" OR "climate change adaptation" OR "sustainable food system").

The literature selection process followed the four stages of the PRISMA framework: identification, screening, eligibility, and inclusion. A total of 400 records were retrieved from Google Scholar and Scopus, followed by a deduplication process based on similarities in title, author, publication year, and DOI, where available. After removing 48 duplicate records, 352 unique articles remained and were screened based on title and topic relevance. Following abstract and full-text assessment, 128 articles were considered eligible for further evaluation. Finally, 82 studies were included in the qualitative synthesis **(Table 1)**. Inclusion criteria comprised studies discussing urban agriculture, food security, sustainability, climate adaptation, or urban resilience, while irrelevant and duplicate studies were excluded.

Table 1. Summary of literature selection based on the PRISMA stages

PRISMA Stage	Description	Number of Records
Identification	Records identified from Google Scholar and Scopus	400
Duplicate removal	Duplicate records removed	48
Screening	Unique records screened based on title/topic relevance	352
Eligibility	Articles assessed through abstract/full-text review	128
Included	Studies included in qualitative synthesis	82

2.3 Analysis technique

The analysis was conducted through narrative and thematic synthesis. The literature was classified into several major themes, including food security, environmental sustainability, resource efficiency, climate adaptation, urban farming technology, governance, socio-economic benefits, and implementation challenges. These themes were subsequently synthesized into three main analytical categories: strategies, trade-offs, and synergies.

The strategies category refers to urban agriculture approaches or models with potential applicability in urban contexts. The trade-offs category refers to the consequences or conflicts between competing objectives arising from the implementation of urban agriculture. Meanwhile, the synergies category refers to the integration of multiple benefits that can simultaneously strengthen food security, sustainability, and urban resilience.

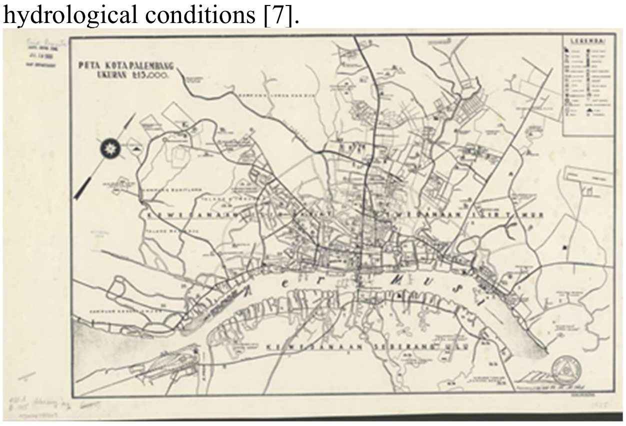
3 Results and Discussion

2.4 Historical and current overview of Palembang

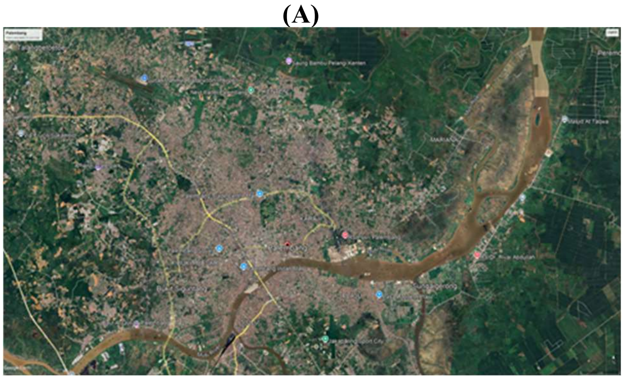
A comparison between the historical map of Palembang in 1930 and current satellite imagery from 2026 reveals a substantial spatial transformation of the city, particularly in relation to the expansion of built-up areas and the changing relationship between the urban system and the surrounding aquatic landscape. In the early twentieth century, Palembang's spatial structure still demonstrated a strong dependence on the Musi River as the primary corridor for mobility, economic activities, and settlement formation. The concentration of road networks and residential areas along the river indicates that the city's morphology evolved according to the logic of a river-based city, while peripheral areas remained largely dominated by open spaces, swamp ecosystems, and undeveloped landscapes **(Figure 1)**.

In contrast, current satellite imagery illustrates a far more extensive and dispersed pattern of urban expansion. The growth of residential areas, transportation infrastructure, and economic activities has extended the urban footprint toward peri-urban regions. This transformation indicates increasing pressure on open spaces, wetland ecosystems, and green-blue networks that play a critical role in maintaining the city's ecological functions. Within the context of climate-smart urban agriculture, these dynamics suggest that urban agriculture development in Palembang is not solely associated with food production, but also with spatial management, climate adaptation, resource efficiency, and the restoration of urban ecological functions.

Accordingly, the spatial transformation of Palembang from a river-based city into a more complex metropolitan area underscores the importance of adaptive urban agriculture approaches capable of responding to land constraints and environmental pressures. Models such as household food gardens, low-cost hydroponics, aquaponics, community gardens, organic waste management, and integration with green-blue infrastructure may therefore be positioned as part of an urban food system transformation strategy. Such approaches enable urban agriculture to contribute not only to food security, but also to environmental resilience and the long-term sustainability of Palembang's urban spatial system. Recent field-based studies conducted in Palembang and other tropical lowland ecosystems in South Sumatra further indicate that adaptive cultivation systems, including floating cultivation and shallow-water urban farming, can support vegetable productivity under fluctuating hydrological conditions [7].



(A)



(B)

Fig 1. Overview of Palembang in 1930 (A) and at present (B). Source: Plattegrond Gemeente Palembang [8]; Google Earth Imagery [9].

2.5 Publication trends and the development of urban agriculture discourse

The results indicate that urban agriculture has become a rapidly expanding field of study. Publications increased significantly during the 2021–2025 period, with a notable concentration of articles published in 2024 and 2025 **(Figure 2)**. This increase may be interpreted as an academic response to the growing vulnerability of urban food systems, the pressures of urbanization, climate change, and the urgent need for urban food system transformation.

Within the global literature, urban agriculture is increasingly positioned as part of the broader agenda of urban resilience and global sustainability. Langemeyer et al. [1] emphasized that urban agriculture can serve as an important pathway toward urban resilience and sustainability. Similarly, Armanda et al. [2] demonstrated that urban agriculture innovations can contribute to food security and sustainability, although these contributions are highly dependent on system design, production scale, and resource inputs. Meanwhile, McDougall et al. [4] showed that small-scale urban agriculture may achieve high productivity, but requires careful input management to remain sustainable.

The literature trend also reveals a shift from a solely food-production-oriented perspective toward a more systemic approach. Urban agriculture is now increasingly associated with the water-energy-food nexus, circular economy, green-blue infrastructure, urban metabolism, and smart city frameworks. For instance, Deksissa et al. [3] highlighted the importance of integrating urban agriculture with stormwater management and circular economy strategies, while Babaei et al. [10] discussed sustainability indicators within the water-energy-food nexus framework. This shift is particularly relevant to Palembang, given the city's strong hydrological characteristics and its vulnerability to flooding.

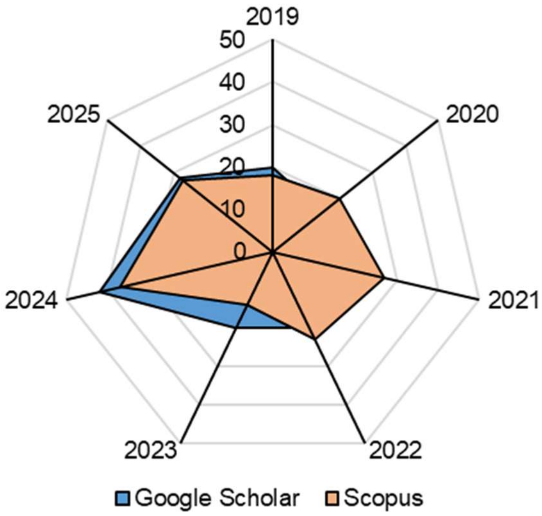


Fig 2. Annual publication trends of urban agriculture studies identified in the review

2.6 Climate-smart urban agriculture strategies for Palembang

2.6.1 Household food gardens and home-based agriculture

The first and most relevant strategy for Palembang is the development of household food gardens. Residential yards represent micro-scale spaces that can be utilized for the cultivation of vegetables, fruits, medicinal plants, and nutrient-rich food crops. In the context of developing cities, household food gardens offer significant advantages because they are relatively low-cost, easily accessible, and can be implemented by households without substantial dependence on advanced technologies.

The literature indicates that home gardening and small-scale urban farming can strengthen household food access, particularly during disruptions in food supply chains [11]. In Palembang, this strategy may be particularly suitable for densely populated residential areas, urban kampungs, and neighbourhoods with limited access to fresh food. Beyond improving household food consumption, household food gardens may also enhance nutritional literacy, strengthen the role of women in food security, and support household economies.

Nevertheless, the effectiveness of household food gardens depends on the availability of technical assistance, access to seeds, safe planting media, and simple maintenance models. Without such support, household food garden initiatives often remain short-term programs with limited sustainability. Therefore, the design of household food garden programs should integrate technical, institutional, and community-based incentive mechanisms to ensure long-term implementation and continuity.

2.6.2 Hydroponics, aquaponics, and soilless farming systems

The second strategy involves the development of hydroponics, aquaponics, and other soilless farming systems. These systems are particularly important for cities facing land limitations and potential soil quality issues. Hydroponic systems can improve space and water-use efficiency, while aquaponics integrates fish and plant cultivation within a single circular system. Several studies have highlighted hydroponics and aquaponics as important innovations in urban farming due to their ability to address land scarcity and enhance productivity within limited spaces [12].

In the context of Palembang, aquaponics holds particular relevance because of the city's strong river-based identity and fish consumption culture. Household- or community-scale aquaponic systems may therefore be developed to simultaneously produce vegetables and fish. However, these systems require technical knowledge related to water quality, plant nutrients, fish stocking density, pH balance, and disease management. Consequently, their implementation depends on adequate training programs and the development of realistic and economically viable business models.

2.6.3 Selective rooftop farming and vertical farming systems

Rooftop farming and vertical farming are frequently promoted as agricultural solutions for densely populated urban areas. Rooftop agriculture can enhance the utilization of building spaces, reduce surface heat, and support local food production. Similarly, vertical farming offers high productivity through controlled environmental systems and the efficient use of vertical space [5].

However, in the context of Palembang, the implementation of rooftop and vertical farming should be approached selectively. High-tech vertical farming models require substantial capital investment, energy consumption, cooling systems, artificial lighting, and advanced technical expertise. If poorly designed, such systems may generate high carbon footprints and elevated production costs. Therefore, more appropriate approaches for Palembang would include simplified vertical farming models based on planting racks, passive hydroponic systems, or semi-controlled systems implemented in schools, offices, apartment buildings, markets, and other public facilities.

2.6.4 Integration with urban green-blue infrastructure

The fourth strategy involves integrating urban agriculture with the city's green-blue infrastructure. As a river-based city, Palembang has significant potential to connect urban agriculture with river corridors, retention ponds, urban parks, waterfront buffer zones, and other green open spaces. Such integration may expand the role of urban agriculture beyond food production, positioning it as part of the city's broader ecological system.

Urban agriculture as a nature-based solution and a component of urban green infrastructure. In the context of Palembang, community gardens may be developed within safe open spaces that are free from contamination risks and do not interfere with hydrological functions. These systems may also be integrated with infiltration systems, composting, rainwater harvesting, and water management education initiatives.

2.6.5 Strengthening governance and community-based institutional capacity

Urban agriculture cannot be sustained without supportive governance structures. The success of urban agriculture is strongly influenced by land access, policy support, community partnerships, institutional models, and integration with urban planning processes. Therefore, Palembang requires a cross-sectoral governance framework involving food agencies, agricultural agencies, environmental agencies, urban planners, local administrative units, universities, community organizations, and the private sector.

Urban agriculture policies should encompass the provision of temporary land access, incentives for community gardens, technical training programs, marketing support, integration with school-based initiatives, and food safety standards. Without an adequate governance framework, urban agriculture risks remaining a sporadic activity with limited capacity to generate systemic impacts.

2.7 Trade-offs in climate-smart urban agriculture

2.7.1 Productivity vs. energy consumption

One of the primary trade-offs in urban agriculture lies in the relationship between productivity and energy consumption. High-tech systems such as vertical farming, rooftop greenhouses, and controlled environment agriculture can achieve high production levels, but often require substantial electricity for lighting, cooling, pumps, sensors, and humidity control. Armanda et al. [2] and McDougall et al. [4] demonstrated that urban agriculture can contribute to food security; however, its sustainability largely depends on the management of resource inputs.

In the context of Palembang's hot and humid climate, cooling and ventilation requirements may pose significant challenges for enclosed farming systems. Therefore, climate-smart urban agriculture should prioritize low-energy approaches, such as passive hydroponic systems, naturally ventilated greenhouses, local shading strategies, and the use of renewable energy whenever feasible.

2.7.2 Food security vs. food safety

Urban agriculture can improve access to fresh food; however, it may also introduce food safety risks when practiced on contaminated land. Risks related to soil contamination, water quality, pesticides, and urban pollution represent critical concerns. The literature on urban soil health emphasizes that urban soils may contain contaminants, thereby requiring soil testing and risk management before being utilized for food production [13].

In the context of Palembang, urban agriculture sites should therefore be selected carefully, particularly in areas surrounding industrial zones, high-traffic roads, waste disposal sites, and former land uses with potential soil contamination. In high-risk locations, container-based systems, raised beds, hydroponics, or controlled planting media are considered safer alternatives than direct cultivation in the ground.

2.7.3 Water efficiency vs. infrastructure dependency

Hydroponic and aquaponic systems are often regarded as more water-efficient than conventional agriculture. However, these systems depend on supporting infrastructure such as pumps, pipes, containers, aerators, nutrient solutions, and continuous water quality maintenance. Without proper maintenance, system failures may occur and result in economic losses. This trade-off is particularly important for community-based programs, as sustainability depends not only on technology adoption but also on long-term maintenance capacity.

In the context of Palembang, the utilization of rainwater, retention ponds, and recirculating water systems presents significant opportunities. Nevertheless, water quality must be carefully monitored to prevent potential health risks. Integration with urban water management systems should therefore be designed cautiously to avoid sanitation problems and food safety concerns.

2.7.4 Commercialization vs. social inclusion

Urban agriculture can be developed as an economic enterprise; however, excessive commercial orientation may reduce its social benefits. High-technology urban farming models are often more accessible to financially advantaged groups, while low-income communities frequently face limitations in land access, capital, and technical training. This condition creates a trade-off between market efficiency and food equity.

Therefore, urban agriculture models in Palembang should seek to balance commercial and community-based approaches. Community gardens, school gardens, household food gardens, and local food cooperatives should be prioritized to ensure that the benefits of urban agriculture are distributed more inclusively rather than concentrated among specific business actors.

2.7.5 Space utilization vs. spatial planning conflicts

Urban agriculture requires physical space, while urban land is simultaneously subject to multiple competing functions. Urban agriculture frequently faces pressure from urbanization and land-use change. In Palembang, spatial conflicts may emerge among the demands for housing, commercial activities, transportation infrastructure, green spaces, and food production functions.

The solution is not to convert all urban spaces into agricultural land, but rather to identify the most suitable locations for urban agriculture, such as residential yards, vacant land, rooftops of public buildings, schools, selected safe buffer zones, and productive urban parks. In subsequent stages, GIS-based approaches and land suitability assessments may be applied to determine priority locations for urban agriculture development.

2.8 Synergies in climate-smart urban agriculture

2.8.1 Food security and local economic development

Urban agriculture can strengthen food security by increasing the availability of fresh food, diversifying food sources, and reducing dependence on external food supplies. At the household level, urban agriculture may reduce food expenditures and improve vegetable consumption. At the community level, it can generate local economic opportunities through the sale of agricultural products, seedlings, compost fertilizers, training services, and processed food products.

Giyarsih et al. [14] demonstrated that urban farming can contribute to urban food security within the Indonesian context. This finding is particularly relevant for Palembang, as it highlights that urban agriculture is not merely a global issue, but also a practical and applicable strategy for Indonesian cities.

2.8.2 Climate adaptation and environmental management

Urban agriculture can function as a climate change adaptation strategy through the expansion of green cover, reduction of micro-urban temperatures, utilization of rainwater, and reduction of surface runoff. When integrated with green drainage systems, urban parks, and productive open spaces, urban agriculture may help cities address local flooding and urban heat challenges.

Deksissa et al. [3] emphasized the importance of linking urban agriculture with stormwater management and circular economy approaches. In the context of Palembang, this perspective is particularly relevant because water-related issues constitute a central component of the city's dynamics. Urban agriculture may therefore be developed not only as a food production system, but also as an integral element of urban water management.

2.8.3 Organic waste management and circular economy

One important synergy lies in the relationship between urban agriculture and organic waste management. Organic waste generated from households, markets, restaurants, and schools can be processed into compost to support local food production. In this way, urban agriculture may simultaneously reduce the burden of urban waste while providing low-cost agricultural inputs.

This model could become an important strategy for Palembang, as large cities commonly face challenges related to waste management. The development of compost banks, community gardens, and compost distribution systems may strengthen the circular economy at the neighbourhood level.

2.8.4 Education, health, and social cohesion

Urban agriculture also provides important non-productive benefits. Community gardens and school gardens can function as spaces for environmental education, nutrition awareness, healthy food promotion, and climate change education. Gardening activities may also strengthen social interaction, expand community participation, and enhance residents' sense of ownership toward their surrounding environment. Similarly, Orsini et al. [15] demonstrated that urban agriculture serves multiple functions, ranging from food production to recreation, education, and community empowerment.

2.8.5 Spatial planning, resilience, and food system transformation

The most strategic synergy lies in the integration of urban agriculture into urban planning systems. When incorporated into spatial planning frameworks, food security policies, and climate adaptation strategies, urban agriculture can become an integral component of urban food system transformation.

The literature emphasizes that urban agriculture should be understood as part of a broader urban food system rather than as an isolated intervention. Accordingly, urban agriculture is not only examined as a food production practice, but also as a component of sustainable urban development, climate change adaptation, community resilience enhancement, and urban food system transformation.

A concise synthesis of the strategies, trade-offs, and synergies for Palembang is presented in **Table 2**.

2.9 Conceptual framework of climate-smart urban agriculture for Palembang

Based on the synthesis above, this article proposes a conceptual framework for climate-smart urban agriculture in Palembang consisting of five main pillars. The framework positions urban agriculture as a socio-ecological system rather than merely a cultivation technique. Through this perspective, urban agriculture may simultaneously contribute to food security, climate resilience, environmental health, and social equity **(Table 3)**.

The first pillar is local food production. This pillar includes household food gardens, community gardens, simple hydroponic systems, aquaponics, and selective rooftop farming. Its primary objective is to increase the availability of fresh food while shortening food supply chains.

The second pillar is climate adaptation. Urban agriculture should be integrated with rainwater management, green spaces, urban heat reduction strategies, and nature-based drainage systems. This pillar is particularly important because Palembang faces significant hydrological and climate-related vulnerabilities.

The third pillar is the circular economy. Organic waste should be regarded as a resource rather than waste material. Composting, the utilization of market waste, and organic nutrient systems may strengthen urban agriculture while simultaneously reducing the burden of urban solid waste.

The fourth pillar is social inclusion. Urban agriculture should actively involve low-income households, women, schools, local communities, and vulnerable groups. The objective is to ensure that the benefits of urban agriculture are distributed inclusively rather than concentrated among financially advantaged groups.

The fifth pillar is adaptive governance. Municipal governments need to provide policy support, land access, incentives, technical training, food safety standards, and monitoring mechanisms. Urban agriculture should therefore be integrated into food security policies, green open space planning, climate adaptation strategies, and local economic empowerment programs.

4 Conclusion

This study demonstrates that urban agriculture has considerable potential as a climate-smart city strategy, particularly in addressing the challenges of food security, climate change, urbanization, and the vulnerability of urban food systems. In the context of Palembang, climate-smart urban agriculture should be developed through a combination of community-based approaches and appropriate technologies. Relevant strategies include household food gardens, community gardens, simple hydroponic systems, aquaponics, selective rooftop farming, organic waste management, and integration with the city's green-blue infrastructure. These approaches may generate synergies among food security, climate adaptation, local economic development, environmental management, and community empowerment.

Nevertheless, urban agriculture also involves several trade-offs that must be carefully managed. Major challenges include land limitations, competition for urban space, energy and water requirements, risks of soil contamination, technological costs, unequal access, and policy fragmentation. Therefore, urban agriculture should not be positioned as a single solution to urban food challenges, but rather as one component within a broader transformation of urban food systems.

This study is limited by the use of two databases and the predominance of English-language literature. Future studies may incorporate bibliometric analysis and broader regional datasets to strengthen the analytical framework.

Table 2. Synthesis of strategies, trade-offs, and synergies for the case of Palembang

Dimension	Main Strategies	Trade-offs	Synergies
Food production	Household food gardens, community gardens, simple hydroponic systems	Limited production scale; maintenance continuity	Improved access to fresh food; reduced household food expenditures
Technology	Aquaponics, soilless farming, selective rooftop farming	Costs, energy demand, technical skills requirements	Space and water efficiency; local economic innovation
Environment	Composting, rainwater harvesting, green-blue infrastructure integration	Water/soil quality risks; sanitation concerns	Reduction of organic waste; adaptation to flooding and urban heat
Socio-economic	School gardens, food cooperatives, community empowerment	Inequality in access to capital and land	Social cohesion; education; micro-enterprise opportunities
Governance	Integration into food policies, green open space planning, and climate adaptation strategies	Institutional fragmentation	Cross-sectoral coordination; urban food system resilience

Table 3. Conceptual framework of climate-smart urban agriculture for Palembang

Pillar	Policy Focus	Examples of Interventions for Palembang
Local food production	Strengthening household- and community-scale food production	Household food gardens, neighborhood community gardens, school-based hydroponic systems
Climate adaptation	Reducing flood risks and urban heat impacts	Productive gardens integrated with rainwater harvesting and green drainage systems
Circular economy	Linking urban farming with organic waste management	Compost banks, market-based composting systems, community organic fertilizers
Social inclusion	Ensuring access for vulnerable groups	Training programs for women, youth, food-related micro, small, and medium enterprises (MSMEs), and urban farmer groups
Adaptive governance	Promoting cross-sectoral policy integration	Integration of urban agriculture into food policies, green open space (RTH) planning, and climate adaptation strategies

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