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STRENGTHENING URBAN FOOD SECURITY THROUGH COMMUNITY GARDEN PROGRAMMES: THE ROLE OF LOCAL AUTHORITIES

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ABSTRACT

The implementation of community garden programmes in urban areas, as outlined in the Green Neighbourhood Guidelines (Department of Town and Country Planning, 2012), supports sustainable development through the creation of green neighbourhoods. These initiatives not only contribute to the reduction of carbon emissions and the mitigation of the urban heat island effect, but also strengthen urban food security by enabling local fresh food production, reducing reliance on rural supply chains, and improving community access to nutritious food sources. Community gardens require active community participation, collaboration with non-governmental organisations, and multi-agency support involving local authorities as well as state and federal governments. The implementation of community gardens supports three key dimensions of food security at the local level: availability, accessibility, and stability of supply. Local authorities play a facilitative role by providing land, policy support, and implementation coordination, thereby enabling these programmes to be delivered in a systematic and sustained manner. Garden development typically involves site identification, participatory planning with the community, the provision of technical assistance, training, and agricultural inputs, followed by phased cultivation activities. Continuous monitoring and maintenance by the community, institutionally supported by local authorities, ensure the long-term viability of the gardens and their effectiveness in enhancing urban food security. Collectively, this process contributes to the formation of a sustainable neighbourhood ecosystem that is socially resilient, economically viable, and secure in terms of local food systems.

Keywords: community gardens; urban food security; resilience; local authorites; Johor.

ABSTRAK

Pelaksanaan program kebun komuniti di kawasan bandar, seperti yang dinyatakan dalam Garis Panduan Kejiranan Hijau (Department of Town and Country Planning, 2012), menyokong pembangunan mampan melalui pembentukan kejiranan hijau. Inisiatif ini bukan sahaja menyumbang kepada pengurangan pelepasan karbon dan mitigasi kesan pulau haba bandar, malah turut memperkukuh keselamatan makanan bandar dengan membolehkan pengeluaran makanan segar tempatan, mengurangkan kebergantungan kepada rantaian bekalan luar bandar, serta meningkatkan akses komuniti kepada sumber makanan berkhasiat. Kebun komuniti memerlukan penyertaan aktif masyarakat, kerjasama

dengan organisasi bukan kerajaan (NGO), serta sokongan pelbagai agensi yang melibatkan pihak berkuasa tempatan, kerajaan negeri dan kerajaan persekutuan. Pelaksanaan kebun komuniti menyokong tiga dimensi utama keselamatan makanan di peringkat tempatan, iaitu ketersediaan, kebolehcapaian, dan kestabilan bekalan. Pihak berkuasa tempatan memainkan peranan sebagai pemudah cara dengan menyediakan tanah, sokongan dasar, serta penyelarasan pelaksanaan, sekali gus membolehkan program ini dilaksanakan secara sistematik dan berterusan. Pembangunan kebun lazimnya melibatkan proses mengenal pasti tapak, perancangan secara partisipatif bersama komuniti, penyediaan bantuan teknikal, latihan, dan input pertanian, diikuti dengan aktiviti penanaman secara berperingkat. Pemantauan dan penyelenggaraan berterusan oleh komuniti, dengan sokongan institusi daripada pihak berkuasa tempatan, memastikan kelangsungan jangka panjang kebun tersebut serta keberkesanannya dalam meningkatkan keselamatan makanan bandar. Secara keseluruhannya, proses ini menyumbang kepada pembentukan ekosistem kejiranan mampan yang berdaya tahan dari segi sosial, berdaya maju dari segi ekonomi, serta terjamin dari segi sistem makanan tempatan.

Kata kunci: *Kebun komuniti; keselamatan makanan bandar; daya tahan; pihak berkuasa tempatan; Johor.*

INTRODUCTION

Climate change has increasingly disrupted food and water security through rising temperatures, altered rainfall patterns, and the growing frequency of extreme climate events (IPCC, 2023). These challenges threaten global efforts to achieve the Sustainable Development Goals (SDGs) and highlight the urgent need for integrated strategies to strengthen urban and community resilience. In this context, local food production plays a critical role by enhancing social and organisational capacity, strengthening physical urban infrastructure, and supporting economic resilience, thereby enabling cities to sustain food security and improve quality of life (Tahir & Hussin, 2012).

At the same time, urban agricultural land has been progressively reduced due to rapid urbanisation, land use change, and development pressures (Amat Janji, 2020). High land values and competing urban functions have further discouraged agricultural activities within cities, increasing dependence on rural food supply chains and exposing urban populations to vulnerabilities in food availability and access.

Urban agriculture initiatives, particularly community garden programmes present a strategic approach to enhancing urban food access and local food production. However, their implementation continues to face significant challenges, including limited land availability, financial constraints, high establishment costs, weak planning coordination, and low awareness of institutional support mechanisms (Muhammad et al., 2020). These constraints have hindered the effective utilisation of idle urban reserve land and limited the potential of community gardens to contribute meaningfully to urban food security.

In response, this study examines the key components influencing the development and implementation of community garden programmes in urban areas, with particular emphasis on community-driven processes and the facilitative role of local authorities. By addressing the limited attention given to local authority perspectives in existing research, this study aims to generate insights that can support more systematic, effective, and sustainable community garden initiatives to strengthen urban food security.

Significance of the Study

This study contributes to existing knowledge by identifying key components that influence the success or failure of community garden programmes during their development and implementation. While previous research has examined urban community gardens in general, limited attention has been given to these programmes from the perspective of local authorities, particularly those responsible for planning, managing, and coordinating implementation. By addressing this gap, the study provides new insights into institutional roles, implementation processes, and the effective use of underutilised reserve land for community-based food production within local authority jurisdictions.

From both theoretical and practical perspectives, this study extends current understanding by highlighting the role of local authorities as coordinators and facilitators of community garden initiatives, including their involvement in managing Spaces Left Over After Planning (SLOAP). The findings offer practical value by informing local authorities on strategies to strengthen programme design through inclusive community participation, improved coordination, and targeted support mechanisms. In addition, the study contributes to community capacity-building and organisational learning, while assisting policymakers and practitioners in refining approaches that enhance programme effectiveness, sustainability, and contributions to urban food security.

Literature Review

The development and implementation of community garden programmes by Local Authorities in Malaysia are largely shaped by their institutional role in promoting urban community gardening, particularly in managing SLOAP and strengthening organisational competencies. These initiatives align closely with the United Nations SDGs, a global framework of 17 goals and 169 targets aimed at achieving sustainable development for all. In particular, SDG 2: Zero Hunger, in particular, seeks to end hunger, achieve food security, improve nutrition, and promote sustainable agriculture.

According to the Department of Statistics Malaysia (2021), the SDGs encompass three main dimensions: social (56%), economic (20%), and environmental (24%). This study focuses primarily on SDG 2: Zero Hunger. Malaysia, along with 192 other countries, formally committed in 2015 to supporting the SDGs under the United Nations, with the aim of eradicating poverty, protecting the environment, and ensuring peace and prosperity by 2030 (Department of Statistics Malaysia, 2022).

The development and management of community gardens involve both community capacity-building and governance at the local authority level. Local authorities are expected to strengthen human resource competencies to respond proactively to environmental and socio-economic challenges. At the same time, community members must develop relevant skills to foster cohesion and take advantage of economic opportunities. Human capital development within both community groups and local authorities is essential to sustain garden initiatives and respond effectively to dynamic market and national economic conditions.

Focus on SDG 2: Zero Hunger

The conceptual framework for community garden development is grounded in SDG 2, which aims to end hunger, achieve food security, and promote sustainable agriculture. SDG 2 comprises eight targets monitored through 14 indicators. The first five “output targets” include:

1. Ending hunger and ensuring access to safe, nutritious, and sufficient food
2. Eliminating all forms of malnutrition, including stunting and wasting in children
3. Increasing agricultural productivity and income for small-scale food producers
4. Ensuring sustainable food production systems and resilient agricultural practices to adapt to climate change, extreme weather, droughts, floods, and other disasters, while improving soil quality

5. Preserving the genetic diversity of seeds, plants, livestock, and related wild species, and ensuring fair and equitable benefit-sharing

The remaining three targets focus on mechanisms for achievement, including investment and international cooperation in rural infrastructure, agricultural research, extension services, technology development, and well-functioning food commodity markets (Urbanice Malaysia, 2020).

The implementation of community garden programmes is therefore closely linked to community capacity to carry out on-the-ground activities (Muhammad & Rami, 2026). Collective action among participants is essential for maintaining consistent garden management. Programme evaluation should consider both community member development and local authority competencies. Learning guided by SDG targets srengthens community capacity and supports programme sustainability through structured collaboration between local authorities and participants (Bascal, 1990). Knowledgeable and skilled communities contribute to improved coordination, procedural efficiency, and overall resilience, thereby reinforcing the effectiveness of community garden initiatives.

Urban Community Garden Policy (UCGP)

Local authorities are responsible for monitoring and managing community garden activities within their administrative jurisdictions. The Urban Community Garden Policy (UCGP) serves a dual purpose: supporting effective landscape management and delivering multiple benefits to urban communities.

Community garden programmes in Malaysia were initiated in 1997 through the Program Semai Indah, launched by the Ministry of Housing and Local Government. This was followed by the Edible Gardens initiative in 2008 during the International Landscape and Garden Festival (LAMAN). Program Bumi Hijau, introduced under the Food Security Policy by the Ministry of Agriculture and Food Industries (MAFI) in 2005, was further strengthened in 2008 with the "Plant, Breed, and Consume" concept.

Ongoing support from the Ministry of Housing and Local Government (KPKT) includes the Circular of the Chief Secretary of KPKT No. 5/2008 and the Rakan Taman Programme introduced in 2013, which promotes voluntary community participation in park maintenance and urban agriculture activities. The UCGP documentation also incorporates Community Garden Implementation Guidelines, which provide a formal reference for conducting gardening activities safely and in compliance with regulatory requirements.

Concept of Urban Community Gardens

Community gardens are a form of urban agriculture or "urban farming" that contributes to social, economic, and public health outcomes. Urban agriculture encompasses the cultivation, processing, and distribution of food and other products within urban areas and their surroundings, relying on local skills, innovation, and sustainable agricultural practices (Seruan Tani, 2014; Bailkey & Nasr, 2000; Mohd Ramzi et al., 2017).

Community gardens can be classified into three types:

1. Commercial: Market-oriented, medium to large-scale urban farms, peri-urban farms, and beekeeping operations
2. Non-commercial: Gardens focused on self-consumption or educational activities
3. Location / activity-based: Gardens based on physical location, including residential gardens, community-shared plots, rooftops, schoolyards, restaurants, balconies, and public or private land (Tornaghi, 2014)

These categories illustrate the diversity of urban agriculture practices and the potential of community gardens to support urban food security, strengthen social cohesion, and promote sustainable urban development.

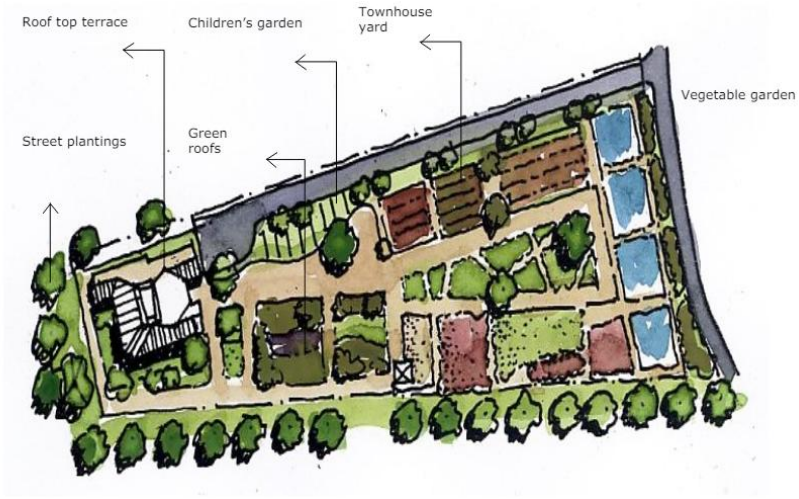

Figure 1. Example layout of community gardens (JPBD Peninsular Malaysia, 2012)

In addition to commercial and non-commercial urban agriculture categories, urban agriculture can alos be categorised based on the location of activities. According to Tornaghi (2014), location-based urban agriculture includes residential gardens, community-shared land plots, rooftop gardens, schoolyard greenhouses, restaurant-adjacent gardens, balcony gardens, and gardens on public or private land.

Figure 2. Urban community garden concept (Suoza, 2021)

METHOD

Based on the objectives of this study, which focus on identifying the components influencing the development and implementation of community garden programmes, a quantitative approach was deemed most appropriate. Accordingly, quantitative methods were employed to objectively assess the study variables, particularly to examine the relationships between factors associated with community-level implementation processes and the role of local authorities. The study followed systematic research procedures consistent with the selected design, including structured data collection and statistical analysis to ensure the validity and reliability of the findings.

A case study design was adopted in line with Merriam (2009), who emphasises the exploration of a phenomenon through one or more cases. This approach is suitable for developing an in-depth understanding of community garden programmes within their real-life context, consistent with Stake's (2008) view of case studies as both a process and a product of inquiry. Data collection focused on selected community gardens rather than all 19 gardens in Pasir Gudang. The most relevant cases were identified based on criteria derived from previous studies, ensuring that the selected sites could meaningfully inform analysis of programme development and implementation processes.

Fieldwork and survey-based data collection were conducted in March 2024 and involved 70 respondents comprising community garden members and garden leaders. Respondents were drawn from five purposively selected community gardens in Pasir Gudang, as summarised in Table 1.

Table 1. Chosen community gardens

No.	Community Garden	Number of Respondents
1	Pangsapuri Air Biru Community Garden (2014)	**10**
2	Happy Farm Community Garden (2016)	**10**
3	Balau G Community Garden (2019)	**10**
4	Duku Community Garden (2019)	**10**
5	Taman Mawar Community Garden (2021)	**30**
Total		**70**

RESULTS

Factors and Dynamics of Community Garden Implementation in Supporting Urban Food Security

A descriptive analysis of five community gardens identified several key factors influencing the development and implementation of community garden programmes. All gardens were established on government-reserved land, primarily within strata residential areas (pocket land), idle green spaces, and infrastructure or utility reserves, each presenting different physical and managerial conditions for programme implementation.

In terms of scale, most gardens occupied areas of less than 0.5 acres, while some exceeded 2 acres, indicating substantial variation in physical capacity that influenced site management and levels of community involvement. The duration of implementation ranged from one year to more than eight years, reflecting different stages of programme maturity and continuity. Levels of community participation also varied, with membership ranging from fewer than 10 individuals to more than 20 members. These differences affected coordination mechanisms, distribution of responsibilities, and the sustainability of gardening activities. Overall, the findings indicate that physical, social, and organisational characteristics vary across sites and play a significant role in shaping how community gardens function as mechanisms for supporting urban food security.

Social and Organisational Components

The findings show that social and organisational structures play a central role in programme implementation. Taman Mawar Community Garden, which recorded the highest membership, was initiated and fully managed by local housewives who assumed leadership roles in organising and coordinating activities. Active community involvement contributed to consistent participation, increased social interaction, and strengthened neighbourhood cohesion.

All gardens demonstrated some degree of collaboration with local authorities, government agencies, and non-governmental organisations (NGOs). These partnerships supported programme continuity through training programmes, technical guidance, joint activities, and the provision of materials and equipment. Gardening activities

were organised according to structured schedules and were periodically monitored by local authority coordinators. Each site also appointed garden leaders from among the members, who were responsible for coordinating tasks, mobilising participation, and liaising with external agencies.

Physical Factors

From a physical perspective, effective space and infrastructure management emerged as defining features across all sites. The gardens optimised government-reserved land, including strata open spaces, idle green areas, and infrastructure reserves to accommodate cultivation activities within limited urban environments. Each garden adopted an organised layout with designated planting plots, storage areas, and shared facilities. Systematic management of equipment, cultivation inputs, and routine maintenance enabled continuous garden operations.

Economic Components

Economic factors were reflected primarily in the forms of institutional support and local resource management. Assistance from local authorities, government agencies, and NGOs, including the provision of tools, seeds, fertilisers, and training programmes, reduced the financial burden on participating communities. Member involvement in cultivation activities enhanced gardening skills and enabled food production for household consumption and limited small-scale sales. These economic elements supported the continuity of garden activities and contributed to the operational sustainability of the programmes.

DISCUSSION

The findings indicate that the utilisation of urban reserved land for community gardens in Pasir Gudang is shaped by a combination of enabling and constraining factors. Key enablers include the availability of idle land for productive use, the potential to reduce crime and environmental neglect, and cost savings in local authority maintenance. These factors help explain why certain gardens were successfully established and sustained, as they motivated community participation and justified institutional involvement. Gardens such as Taman Mawar, which exhibited high membership and consistent engagement, benefited from strong community leadership and proactive coordination with local authorities and NGOs. This supports theoretical perspectives that emphasise social organisation and leadership as critical drivers of collective action in urban community initiatives (Othman et al., 2018).

Conversely, several barriers significantly influenced implementation outcomes. Unsuitable land conditions, including rocky terrain, steep slopes, low-lying and flood-prone areas, increased the complexity of site preparation and long-term maintenance. High initial costs, such as Temporary Occupation Licence requirements, unclear site status, and multi-agency approval processes, further constrained programme development. These challenges explain the observed variations in garden scale, levels of participation, and programme continuity. The findings demonstrate that without alignment between physical suitability, financial feasibility, and institutional coordination, community garden initiatives face limitations in sustainability and expansion.

The study further highlights the central role of institutional support in sustaining community gardens. The provision of equipment, planting materials, technical guidance, and training by local authorities, government agencies, and NGOs reduced financial burdens and enhanced participants' technical capacities. This support structure explains the greater resilience observed in gardens that maintained consistent activities over several years. Economically, the gardens enabled households to supplement food supplies and, in some cases, generate small-scale income, reinforcing their contribution to urban food security and household-level resilience.

This research contributes new insights into the Malaysian urban contexts by explicitly linking social, physical, and economic components to programme outcomes. Unlike previous research that largely focused on general concepts of urban gardening, this study identifies concrete factors influencing successful development and highlights the proactive role of local authorities in coordinating and facilitating these programmes. The findings suggest that community garden success depends not solely on grassroots motivation but on structured institutional facilitation, land governance mechanisms, and resource integration.

Overall, the discussion underscores that sustainable community garden development requires integrated planning approaches that simultaneously address land suitability, community leadership, inter-agency coordination, and economic support systems. These insights provide practical guidance for policymakers and urban planners seeking to implement sustainable community-based urban agriculture programmes, while also enhancing the theoretical understanding of the dynamics between urban land use, community organisation, and food security resilience.

CONCLUSION

The proposals and strategies presented aim to strengthen the role of local authorities in the development and implementation of community garden programmes in Pasir Gudang, while supporting the resilient expansion of these initiatives. Based on the study findings and the literature review, underutilised reserve land with potential for conversion into new community gardens was identified as a basis for the proposed planning recommendations. These proposals were presented to local authority coordinators through informal interviews for review and validation, as part of efforts to improve programme implementation.

The proposed strategies encompass two main dimensions: physical aspects, including site selection, spatial planning, and infrastructure management; and non-physical aspects, including community participation, training, collaboration with government agencies and NGOs, and economic resource management. Together, these strategies are intended to ensure the effectiveness and long-term sustainability of community garden programmes.

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