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Fostering Sustainable Communities: Vital role of Local Authorities in urban agriculture practices in strata housing

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Abstract

Cities face environmental pressure due to urbanization. Strata housing is ideal for sustainable urban agriculture. However, several challenges hinder the adoption of urban agriculture in strata housing. Hence, this paper assesses local authorities' roles in urban agricultural practices in strata housing. This study used semi-structured interviews with City Council Y's COB Manager. The findings show that local authorities can promote urban agriculture by creating policies and regulations and allocating public resources and funding. Urban agriculture in strata housing leads to resilient urban environments.

Keywords: Urban Agriculture; Role of Local Authorities; Strata Housing; Sustainable Communities

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1.0 Introduction

Urban Agriculture (UA) is a concept of agriculture that is gaining increasing attention in urban areas. It encompasses activities related to producing, processing, and marketing food and agricultural products within urban and peri-urban areas, utilizing intensive production methods and benefiting from natural resources and urban waste to cultivate various crops (Smit et al., 1996). UA is based on sustainability principles and efficient resource utilization to enhance sustainability. Hence, UA can also be viewed from a different perspective or focus. As Aubry and Kebir (2013) stated, UA helps improve resilience in the food supply chain while encouraging a reduction in transportation distances that can lower GHG emissions. Meanwhile, from an environmental and quality of life perspective, UA provides urban greening, reduces ecological footprint, or enhances landscape management, biodiversity, environmental education, and recreation (Veenhuizen and Dubbeling, 2011). In the face of global population growth and rising urbanization, cities are now under pressure concerning local, regional, and global environmental resources. According to United Nations reports, the global population is continuously increasing, from 2.5 billion people in 1950 (Chandio and Shirazi, 2022) to 8 billion today. Urbanization is the increase in population and the expansion of residential and commercial areas, ultimately converting agricultural land and areas covered by natural vegetation into built-up areas (Aliyu and Amadu, 2017; Yousafzai et al., 2022). In addition, strata schemes within a significant integrated

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development are rising tremendously within the inner city due to the present lifestyle and land scarcity. As the world is undergoing rapid urbanization, tremendous pressure is placed on the food supply and urban environment, especially in fast-developing cities. The reliance on food imports has added pressure to the food needs of urban populations, driving up the cost of living and subsequently affecting the quality of life and sustainability of communities. In the context of UA in strata housing, concerns have been raised, such as limited space and land availability, conflicts with existing regulations and by-laws, lack of knowledge and expertise among residents, and concerns about hygiene and safety. UA offers many benefits, including reducing the carbon footprint through localized food production, green space creation, and improving aesthetics and opportunities for skill development and education as well as improving food security and enhancing community cohesion and social interactions (Lin et al, 2017; Nirusha et al, 2022). Despite the benefits, several challenges and barriers hinder the widespread adoption of UA in strata housing. Strata housing, with features encompassing multi-unit buildings consisting of common areas and facilities, provides a suitable platform for fostering sustainable communities in UA practices. Hence, the roles of local authorities are crucial in supporting and promoting UA in strata housing. Thus, this paper aims to develop a framework for the role of local authorities in UA towards fostering sustainable communities. To achieve the primary aim, the present review is built upon two objectives: (1) to identify the significant challenges and benefits of UA, and (2) to determine the essential role of local authorities of UA in strata housing. UA and its related activities continue to evolve significantly as development requirements emerge.

2.0 Literature Review

Urban Agriculture (UA) has become increasingly popular in cities worldwide. The wide range of UA approach including vertical and indoor farming systems, aquaponics, hydroponics, community gardens, educational and institutional gardens, and residential gardens (Diekmann, 2020). According to Hallett et al. (2017), UA has four main functions in cities: subsistence, economics, recreation, and community building. The world faces three significant challenges, particularly the increase in food demand, population growth, and ecological degradation (Baetly, 2000). It is noted that high urbanization in developing countries can lead to a population increase and threats to food security. Yuen and Kumssa (2013) observed that cities in Asia face the most significant challenges among the three aforementioned critical issues compared to cities in other developing economies. As a result, urban planners are increasingly integrating UA into cities to address urban problems.

2.1 Urban Agriculture (UA) Policies

Urban agriculture began in the early 1970s but gained momentum after the 1973 oil crisis (Bhatt and Farah, 2016). Indeed, local authorities commonly use urban agriculture as a planning tool. Nevertheless, it has only been partially incorporated into policy and planning. According to Dona et. al (2021), this occurs due to several factors, such as the fact that most UA initiatives are disconnected and isolated, inconsistent with planning intentions, and frequently not considered as an urban green space and the absence of a connection between urban ecosystems in the city and agriculture. In many cities, UA practitioners experienced conflict or ambiguity due to the need for a clear policy framework surrounding UA before the beginning of the twenty-first century (Meenar et al., 2017). Until then, local planning and policy initiatives around UA mainly concentrated on developing community gardens, often as a temporary land use before other development or animal husbandry (Lawson, 2004). Due to sanitary, nuisance, and class concerns, early 20th-century legislation restricting animal agriculture (Brinkley and Vitiello, 2014). Then, over the past two decades, an increasing public interest in UA has coincided with the shift toward municipal food systems planning. This provides municipal governments with windows of opportunity to implement policies (Cohen, 2012). The critical strength of local policy is that it can address local concerns gaps and problems with federal guidelines using the specific instruments and structures available to a city. By looking at other countries such as African, Cape Town, is the only South African city with an urban agriculture policy (Olivier and Heineken, 2017). The municipality that has firmly embraced urban agriculture through its urban agricultural strategy, which provides input, resources, access to land, and training. In Malaysia, the government has taken the initiative by developing policies and guidelines for planning the development and management of systematic and organized urban agriculture. Policies namely the National Landscape Policy, the National Urban Policy, the 4th National Agricultural Policy, and the National Community Policy, were introduced to support national development with a green development approach. For example, the implementation of the Urban Community Garden Policy (DKKB) and Urban Community Garden Guidelines are the focus of the National Community Policy, which aims to focus on communities, especially those living in stratified housing areas in the city. Towards supporting the national agenda, UA plays an essential role in achieving the Sustainable Development Goals (SDGs), which are SDG 2 (Zero Hunger) and SDG 11 (Sustainable Cities and Communities).

2.2 Roles of Local Authorities and Benefits of UA in Strata Housing

UA is not a new concept, but it has recently drawn more attention from stakeholder's, particularly local authorities, as it has the potential to offer significant social, economic, and environmental benefits for cities and their residents. Besides that, it also found that urban agriculture practices in developed countries show differences in developing countries concerning their functions in cities (Dona et al., 2021). The social interactions, physical, emotional, and educational benefits have received the most attention in developed countries, while economic benefits are given more attention in developing nations. This discrepancy would help nations to share best practices.

For instance, developing countries could learn from developed nations how urban agriculture can be used to improve the social, physical, and mental well-being of urban residents.

In contrast, developed nations could learn from developing countries how agricultural practices in cities can positively impact the economy. People must be aware of urban agriculture's multifunctional or numerous benefits to encourage UA in cities. Local authorities play a pivotal role in the sustainable implementation of UA. In this sense, the urban and peri-urban environments worldwide concern

central and local authorities. The local authorities or government assistance for the UA approach could vary. These include institutional support (such as inter-agency cooperation and linking with municipal council projects) (Diehl et al, 2020), integrating urban agriculture into urban planning (Koay and Dillon, 2020), establishing legislation/guidelines for urban agriculture (Goodman and Minner, 2019), providing irrigation facilities (Partalidou and Anthopoulou, 2016), providing suitable lands (White and Bunn, 2017), providing gardening supplies (Bonow and Normark, 2018), organizing training (Partalidou and Anthopoulou, 2016), offering grants (Ma'ckiewicz et al, 2018) and more. These supports also could include informal political support (Burdine and Taylor, 2017), market creation (Mitchell and Iglesias, 2019), grant-making, and creating legislation for urban agriculture. UA practices through community gardens have mostly been held on both public and private land, and in some instances, either in government or private lands.

Furthermore, strata schemes with extensive integrated development within the inner city tremendously increase; concerns, however, have been raised regarding limited space and land availability, lack of knowledge and expertise among residents in UA, and concerns about hygiene and safety and conflicts with existing regulations and by-laws. It does not have a clause or guidelines stated as a requirement to implement UA for strata development in planning standards or Act 757. Hence, municipal councils or other appropriate governments must provide the proper support to promote UA and foster sustainable communities.

Nevertheless, strata housing, which includes multi-unit buildings with shared areas and amenities, offers an ideal setting for promoting sustainable communities that practice UA. In reality, to promote urban agriculture in cities, understanding the significant benefits of UA and the essential role of local authorities in practicing UA towards fostering sustainable communities is vital. As they have the power to design and administer the urban lands in most cities, local government entities, such as municipal councils, substantially impact the viability of UA in urban areas.

2.3 Challenges of UA in Strata Housing

Limited space and land availability, a lack of knowledge and experience among residents, issues regarding hygienic conditions and safety, and disputes with existing laws and bylaws are some issues that UA residents in strata housing confront. Neither Act 757 nor the planning standard contains any clauses or guidelines requiring the implementation of UA for strata development. Some difficulties, including a lack of access to fertilizer and manure, pests and diseases, and theft, challenged UA's practice in strata housing. Climate change due to rising temperatures can affect pests and diseases because it causes more fungi and high-risk dengue diseases. Other difficulties experienced by strata residents could be a need for knowledge about market demands, skills in agricultural activity, marketing, and rigorous instruction.

Table 1. Challenges, Benefits and Vital Roles of Local Authorities in UA

Challenges	Main Category	Sub Category	Benefits of UA	Vital Role of Local Authorities in UA
Limited space and land availability	Healthy Benefit	Food nutrition, Physical Emotional, Mental Well Being	Benefits that pertain to enhancing people's physical or mental wellbeing	Institutional support (such as interagency cooperation and linking with municipal council projects)
Lack of knowledge and experience	Social Benefit	Social interaction, Enhance Community Cohesion	Benefits of enhancing connections	Integrating urban agriculture into urban planning
Issue in hygienic conditions and safety	Educational Benefit	New skills and knowledge, Skills development	Benefits allow people to gain knowledge and abilities	Establishing legislation/guideline for urban agriculture
Disputes with existing laws	Economic Benefit	Food Security	Benefits that were tied to any cash gains or cost savings	Providing irrigation facilities
Lack of access to fertilizer and manure	Environment Benefit	Reduce Carbon Footprint, creating green spaces, improving aesthetics,	Benefits help to protect environment and natural ecosystems to beauty the neighbourhood area	Providing suitable lands
Pests and diseases (i.e dengue)				Providing gardening supplies
Theft				Organizing training
Climate Change				Offering grants
Lack of Knowledge (I.e market demands, skills, marketing, rigorous instruction)				Market creation
				Grant-making
				Creating legislation

(Source:) Authors

From illustrating Table 1, Figure 1 presents a conceptual framework that has been constructed using the literature review findings to guide this study.

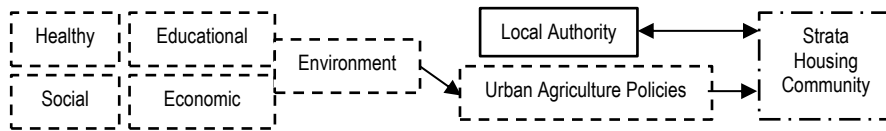


Fig. 1: Conceptual Framework: Local Authorities and Strata Housing Urban Agriculture Sustainability (Source:) Authors

3.0 Methodology

3.1 Qualitative Research

Qualitative research facilitates a thorough investigation into local authorities' perceptions, attitudes, and beliefs regarding urban agriculture in strata housing. The phenomenon above aids in the identification and elucidation of distinct obstacles, prospects, and interactions that are particular to a specific context. This study employs a structured interview methodology to effectively capture the multifaceted nature of the urban agriculture process desired by local authorities. Furthermore, it can elucidate various actors' interconnections, hierarchical structures, and cooperative endeavors in realizing a sustainable community's triumph.

3.2 The Process of Collecting and Analysing Data

The data utilized in this study was obtained via semi-structured interviews conducted on July 14, 2023, a Friday, between 3:00 PM and 4:30 PM, using the Google Meet platform. The interview was conducted with Mr. Y, a Y Local Authority representative currently serving as the Assistant Commissioner of Building. According to Lopez and Whitehead (2013), there are no precise criteria or numbers of participants while looking for sample for data collection in qualitative method. Therefore, as this research is the initial stage of study to explore the UA practice, the interview involves one (1) respondent, Assistant Commissioner of Building who experience and are involved in managing strata housing. Table 2 illustrates the data collection and analysis process, utilizing NVIVO to facilitate the storage and management processes. This is particularly pertinent in qualitative research, where the researchers serve as the research instruments. In this table, the interview protocol for this research has also been developed based on the conceptual framework established before creating the interview protocol.

Table 2. Process of data collection and analysis

Conceptual Framework	Interview Protocol	Thematic Analysis in NVIVO
The development of the conceptual framework involves a thorough and inclusive undertaking that integrates various fundamental elements. The process entails integrating the cognitive framework of the researcher, the knowledge acquired through a comprehensive review of the literature, and the fundamental theories that serve as the basis for this study.	<ol style="list-style-type: none"> 1) Have you participated in any initiatives or policies aimed at fostering sustainable practises in urban areas, such as urban agriculture, as part of your professional responsibilities? 2) Urban agriculture plays a significant role in enhancing food security, promoting environmental sustainability, and fostering community engagement. From a subjective standpoint, does this concept align with the objectives and preferences of the local governing body? 3) Based on your understanding of urban agriculture, do you hold the belief that it possesses potential advantages in promoting sustainable communities within the framework of strata housing? If so, how do you perceive your role in facilitating and bolstering such endeavours? 	<p>Codes</p> <ul style="list-style-type: none"> <input checked="" type="radio"/> Name <input type="radio"/> Agricultural Seeds <input type="radio"/> Budget from Lembaga Perumahan and Agriculture Department <input type="radio"/> Collaboration Between Local Authority and Agriculture Department <input type="radio"/> Community Prepares Farming Space <input type="radio"/> Dengue Control Before Implementing Urban Farming <input type="radio"/> Department of Agriculture <input type="radio"/> Education Program <input type="radio"/> Failure of Urban Farming in Shopping Complex <input type="radio"/> Focus on strategy <input type="radio"/> Food Security <input type="radio"/> Hydroponics in the buildings. <input type="radio"/> Infrastructure <input type="radio"/> Involvement from strata residents <input type="radio"/> Lack of Training in Agriculture <input type="radio"/> Lembaga Perumahan Hartanah Selangor <input type="radio"/> Local Authority Support <input type="radio"/> Logistics by Local Authority <input type="radio"/> Plan Strategic Local Authority <input type="radio"/> Promotion of Urban Farming <input type="radio"/> Space <input type="radio"/> Suitable pH Levels for Land in Urban Farming <input type="radio"/> Support from Local Authority <input type="radio"/> The Effects of Urban Farming on Dengue <input type="radio"/> Vertical farming

(Sources:)Authors

4.0 Findings

4.1 Analysis Process

The interview with Mr. Y will provide valuable insights into the extent of their local authority's engagement in sustainable initiatives, particularly in the context of urban agriculture or comparable endeavors. The analysis findings indicate that establishing a robust collaboration network necessitates the involvement of local authorities, the community, and state government entities. The interview

findings further demonstrate that the partnership between local authorities and external entities capable of providing financial resources for this initiative is a key determinant in fostering the implementation of urban agriculture within a community. Additionally, the study revealed new themes that warrant attention, namely marketing, facilities, motivation, and networking, in addition to the previously identified financial aspects. Stakeholders should exercise prudence in devising strategies to effectively promote and engage residents in this project. The success of this UA project hinges on the presence of consistent and focused motivation. The state government can incentivize communities that effectively maintain urban agriculture (UA) over a specified duration, utilizing its various agencies. The significance of this matter lies in the adoption and prevalence of UA culture in Malaysia, which has not yet reached a state of saturation. The developing nature of this phenomenon necessitates both direct and indirect forms of support to foster its long-term viability within the community. Figure 2 depicts the analytical procedure conducted using NVIVO, a software tool that streamlines the data compilation.

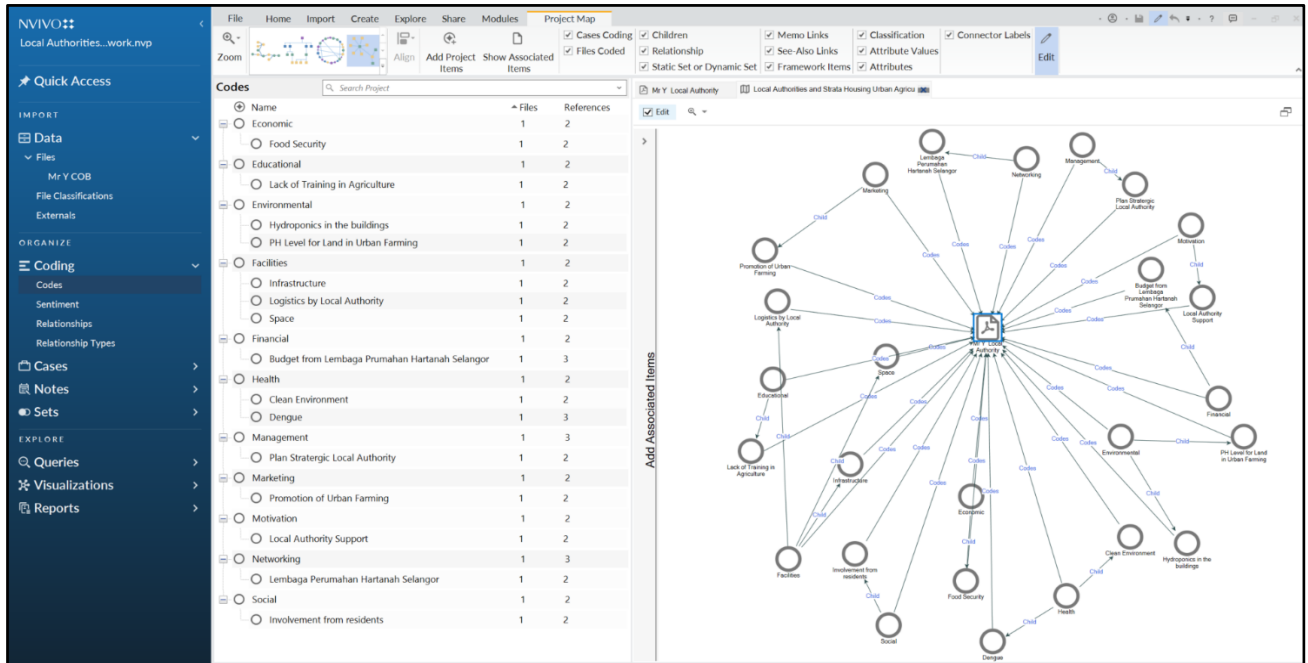


Fig. 2 The analysis process using NVivo has been employed to uncover emerging themes (Source:) Authors

Figure 3 illustrates this final framework's comprehensive and cohesive approach to urban agriculture in strata housing. This comprehensive framework outlines strategies for promoting sustainable communities by implementing urban agricultural practices. It encompasses various aspects such as collaboration, policy development, resource allocation, marketing, motivation, networking, and ongoing evaluation. The statement acknowledges urban agriculture's fluid and progressive characteristics and promotes the importance of being open to change and adaptable in its execution. The framework above serves as a valuable tool for both ongoing initiatives and future endeavors in urban agriculture, facilitating guidance and fostering opportunities for additional research and innovation.

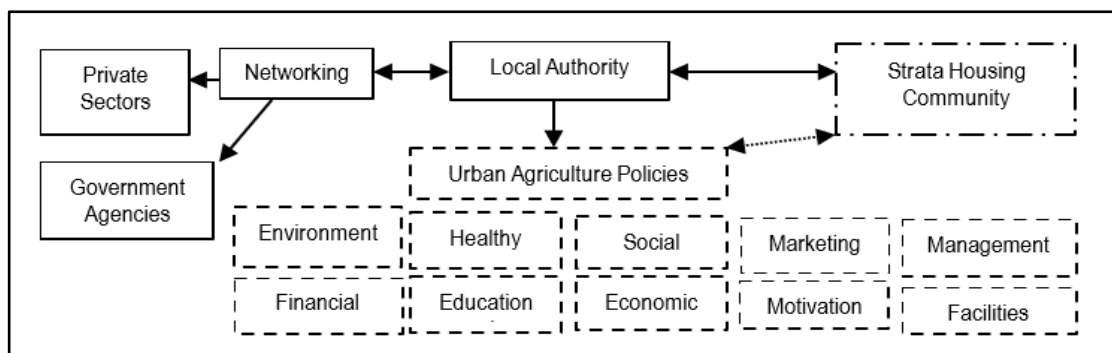


Fig. 3: Framework for Encouragement of Sustainable Urban Agriculture (Source:) Authors

5.0 Discussion

The emerging ideas suggest fostering UA within the community should be codified in a binding ordinance. Law and policy are often the last resort when committing to UA culture. If it becomes a community priority, their efforts will be more focused. The revival and progress of urban agriculture could be significantly driven by the apparent desire of people to adopt a more sustainable way of life (Park and Shin, 2022). However, it would be preferable if local authorities provided gradual encouragement so that UA became a positive cultural norm in the community's homes. One of the primary obstacles encountered in the mobilization of urban agriculture (UA) is the concurrent presence of the dengue problem, which poses a significant challenge to establishing UA within the community. The implementation of crewless aircraft necessitates including a preliminary study that examines the specific location and comprehensively assesses the environmental impact. It is imperative to ensure that UA garners a positive impact from diverse perspectives and maintains its ongoing growth and development.

6.0 Conclusion & Recommendations

Enhancing the UA partnership entails cultivating synergistic alliances among municipal authorities, external entities, and financial institutions to procure necessary funding and resources for urban agriculture initiatives. To enhance the efficacy of collaboration, it is imperative to establish unambiguous channels of communication and mutually agreed-upon objectives. The aim is to formulate and execute strategic marketing strategies to enhance the visibility and recognition of urban agriculture initiatives. Engage with community members through educational initiatives, workshops, and communal gatherings to advocate for the advantages of sustainable agricultural methodologies. Furthermore, it is imperative to invest in establishing appropriate facilities and infrastructure to support urban agriculture. The proposed initiatives encompass establishing a community garden, a rooftop farming area, and a composting facility, aiming to guarantee equal access and usability for all inhabitants. In conclusion, this research is limited on roles of local authority in UA practice concerning in strata housing; therefore, the findings could be vary based on other aspects concerns and different nations as UA practice was emerge. Hence, more comprehensive reviews are needed. It is imperative for local authority to implement a comprehensive framework aimed at the ongoing surveillance and assessment of urban agriculture initiatives. Conduct data collection and analysis to assess the effects of this initiative on various aspects, including sustainability, food safety, community well-being, and cultural aspects within the context of Malaysia.

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Paper Contribution to Related Field of Study

This paper presents a set of recommendations aimed at enhancing motivation and engagement among urban residents in the context of agricultural activities. This strategy holds significant value for both practitioners and researchers who are investigating the dynamics of community engagement within the realm of sustainable urban development.

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