Evaluate the role of urban agriculture in enhancing food resilience: A comparative analysis between Hong Kong and Singapore

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Research background

- Urbanization, by 2050 at least **70% of world population lives in cities**
- Uneven food distribution occurred in both developed and developing countries
- More extreme weather events reduce food production worldwide
- Urban agriculture act as a solution to withstand and absorb the impacts of stresses

Research objectives

- To understand the current situation of urban agriculture in both Hong Kong and Singapore.
- To compare and contrast urban agricultural approaches of each city
- To analysis the role of urban agriculture on boosting food resilience
- To propose recommendations for expanding urban farming

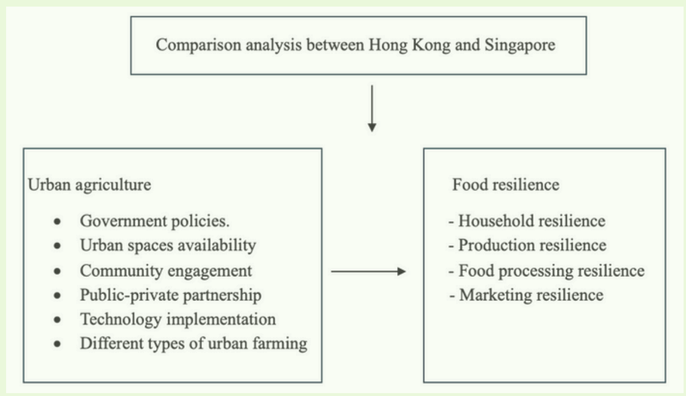
Research significance

- Proposed strategy in food production
- Fill in research gap: little investigation investigation into Hong Kong urban agriculture compared to other countries
- Comparative analysis between Hong Kong and Singapore given they have the similar context

Methodology

- Qualitative analysis: Literature reviews, interview, official websites
- Quantitative analysis: questionnaires (SPSS)

Conceptual framework



Recommendation

- Land use zoning and planning
- Architectural considerations
- Economic incentives
- Governance support
- Public-Private partnership
- Research and development (R&D)

Limitations

- No field assessment in Singapore
- Small sample size (N=142)
- Imbalanced data collected HK: N=109 ; SG: N=33)
- Lack of understanding on urban agriculture which limits the depth of research

Conclusion

- Singapore has done a lot more than Hong Kong in terms of (1) Centralized policies, (2) advanced technology development, (3) community projects
- SG has a higher potential and extent of achieving food resilience

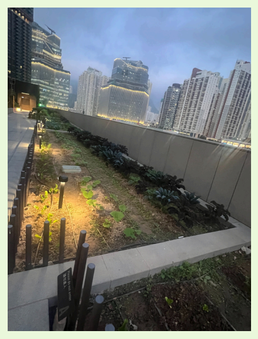
Lessons to be learned

- Hong Kong should learn from Singapore in terms of policy coherence and technological
- Singapore can make use of Lim Chu Kang to re-establish soil-based conventional, low-tech and small scale farming approaches, to expand their agricultural sector

Data analysis and Discussion

Common types of urban agriculture in both cities


Traditonal farming


Rooftop garden


Allotment farming


Greenhouse


Community garden


Vertical farming

Comparision of current status of UA in both cities

	Hong Kong	Singapore
Land availability	7 km² of total land area 3.81% (latest value up to 2021)	0.9% (of total land area) (latest value up to 2022 from World Bank)
Scale	Small	Small
Number of farmers /farms	4300 farmers 2500 farms	No well-documented in recent sources for the number of farmers 254 farms
GDP contribution	<0.1%	0.03%
Percentage of food import	More than 90%	More than 90%
Average prices of local farm products (Mean value, data from Cheung Sha Wan wholesale food, vegetable, fish markets, latest update on April 17, 2025)	Vegetables: $5.58/catty Freshwater fish/marine fish: $46.1/catty Livestock/Poultry $31.7/catty	/
Value of local farm products	HKD$1027 million (latest update: 2023)	SGD$233 million ~HKD$1380 million (latest update: 2023)
Level of awareness	Lower	Higher
Participation rate	Lower	Higher
Local food production	leafy vegetables, pigs or poultry	Vegetables, fish, hen eggs
Percentage of local production	Vegetables: 2% Live poultry: 100% Pigs : 12%	Hen eggs: 26% Vegetables: 14% Fish : 10%

Comparision of technological adoption in both cities

Aspect	Hong Kong	Singapore
Key Technologies Adopted	- **Hydroponics**: Used in indoor farms like Farmacy and Controlled Environment Hydroponic Research and Development Centre - **Vertical Farming**: e.g. Agrician, Farm66 - **Precision farming** Limited adoption, with studies exploring sensors and automation	- **Vertical Farming** Widely adopted, with companies like Sustenir Agriculture and Singrow using multi-story LED farms for high-yield production - **Hydroponics and Aquaponics** - **AI and IoT** e.g. crops analytics, sensors and automation
Level of Adoption	Moderate to low	High

Comparision of community engagement in both cities

Aspects	Hong Kong	Singapore
Approach	Bottom-up	Top-down & bottom-up
Level of participation	Moderate	Moderate-high
Key community initiatives	- many NGOs, private enterprises or individuals organized farming activities in the forms of school and community education tours, workshops - Rooftop Republic, City Farm, HKFYG, Agrician	- structured programs and national initiatives - Community gardens - Engagement often tied to schools, housing estates, and national campaigns - E.g. **Community in Bloom (CIB), Edible Garden Citi, Citiponics**

Comparision of policy and governance in both cities

Aspect	Hong Kong	Singapore
Policy vision	No clear UA vision	Strategic “30 by 30” vision
Government role	Passive, less economic incentives	Proactive, more funding
Land use	Restricted land uses, complicated administration processes	More flexible, allow tendering on buildings’ rooftop ; but limited land restricts the development of UA
Governance	Fragmented policies	Centralized and strong Public-Private-Partnership

Role of urban agriculture in enhancing food resilience UA in both cities

Local production	Similar	
Household resilience	Similar	
Production and processing resilience	Lower	Higher
Marketing resilience	Similar	

Common challenges in achieving food resilience

- Insufficient government support
- Low public awareness and acceptance
- Limited land availability
- High production cost