

Utilization of Developer's Corporate Real Estate Resources for Agricultural Production Contributing to National Food Security: A Conceptual Study

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ABSTRACT

This study aims to develop a conceptual idea for the temporary utilization of developers' corporate real estate resources, particularly land banking assets, to support agricultural production and enhance Malaysia's national food security. The critical challenge addressed is the rapid urbanization and speculative land banking practices that have reduced available arable land, increased reliance on food imports, and disrupted local food production systems. Recognizing the underutilized potential of developer-owned land banks, this study proposes strategic repurposing for fast-yield agricultural activities without compromising future real estate development plans. This study adopts a literature-based approach, drawing from scholarly articles, policy frameworks, and case studies related to land use, urban agriculture, and food security. Content analysis of existing literature identifies key perimeters influencing land utilization for agriculture. Through thematic analysis, the study identifies critical factors that influence the practicality of temporary agricultural activities on corporate land. This method allows for a comprehensive understanding of existing gaps and opportunities within the current development and planning landscape. The expected outcome is a conceptual idea that offers policymakers and developers a practical roadmap to temporarily leverage corporate land resources for agricultural use, contributing to sustainable urban development, enhanced food security, and socio-economic resilience. In addition, it aims to provide an initial conceptual direction that can inform future research, policy formulation, and private sector involvement in adaptive land use for food security. The findings provide both theoretical enrichment in the field of sustainable land management and practical strategies for balancing urban growth with agricultural sustainability in Malaysia.

Keywords: Corporate land banking, urban agriculture, food security, land use policy, sustainable development.

INTRODUCTION

Food security is no longer merely a rural development concern when it has evolved into a multidimensional national security issue influenced by land scarcity, climate change, economic policy, and urban expansion. In the Malaysian context, the dependence on food imports has increased substantially over the past decade, contributing to rising food prices and greater exposure to external disruptions such as geopolitical conflict and pandemics (FAO, 2023; Hassan & Hossain, 2020). With over 24% of the nation's food supply sourced from imports, Malaysia finds itself vulnerable to fluctuations in global supply chains and trade policies. These vulnerabilities were amplified during the COVID-19 pandemic, which exposed the fragility of Malaysia's food systems, particularly in urban and semi urban areas. In response, there has been a growing national discourse around achieving self sufficiency, decentralizing food production, and adopting innovative approaches to land use planning. However, policy and academic attention remain narrowly focused on public land or rural agricultural transformation, overlooking the potential role of private sector landholders especially property developers in reshaping Malaysia's food security strategy.

A particularly underexplored opportunity exists in the temporary utilization of corporate land banks undeveloped land held by developers for speculative or strategic purposes. These land banks, often located in or near urban areas, are usually retained for long term projects and may remain idle for years, thereby contributing little to socio economic development in the interim (Evans, 2004; Adair et al., 2020). While developers face capital holding costs and opportunity losses on such land, these idle resources could serve immediate public functions, particularly in the context of short term agricultural production. This paper argues that underutilized land banks could be temporarily repurposed for fast yield agricultural activities without compromising the developers' long term investment goals. This proposition not only has practical implications for land optimization but also introduces an innovative intersection between real estate development, food policy, and urban sustainability.

Critically, Malaysian urban and spatial planning policies have not evolved to accommodate such integrative land use. The National Agrofood Policy 2.0 (NAP 2.0), for instance, outlines strategic plans for increasing domestic food production but lacks detailed mechanisms to incorporate privately held land assets into this framework. Moreover, zoning restrictions often inhibit commercial land from being temporarily used for agricultural purposes. The current regulatory regime lacks the flexibility to allow landowners, including developers, to contribute to food security in a legally permissible and economically beneficial manner (Gyourko & Krimmel, 2021). This rigidity reveals a fundamental disconnect between land planning legislation and adaptive food security strategies. The policy gap reflects not only institutional fragmentation but also a lack of cross sectoral frameworks that facilitate collaborative governance across real estate and agriculture sectors.

From a scholarly perspective, this paper fills a critical void in the literature by bridging the domains of corporate land banking and food resilience. Existing studies on land banking have focused on its speculative nature, urban containment strategies, or fiscal implications (Louw, 2008; Zhang et al., 2020), while food security literature has largely emphasized rural livelihoods, agricultural subsidies, or environmental sustainability (Tey et al., 2009; Rahman & Sarker, 2022). Yet, few if any studies provide a conceptual model that treats developers as active stakeholders in achieving national food targets. This omission represents a theoretical oversight that perpetuates a siloed approach to land governance. Incorporating underutilized corporate land into urban food systems could provide a transitional solution to land scarcity while enabling greater diversity in food production landscapes.

Technological advancements in smart farming further strengthen the feasibility of this proposition. Precision agriculture, automated irrigation, drone monitoring, and data driven crop management have reduced the dependency on large tracts of rural land and labor intensive methods, enabling farming to be more modular and scalable (Walter et al., 2017; Lieder & Schröter Schlaack, 2021). These innovations open possibilities for high yield, short duration crop cultivation even in urban or peri urban environments. However, the application of such technologies on developer land remains speculative without clear regulatory support or incentive structures. Moreover, the lack of inter agency coordination in Malaysia has hindered pilot projects or testbeds that could validate such integrative approaches. Without an institutional framework for experimental zoning or public private pilot programs, these technologies remain underutilized within private real estate assets.

From an economic standpoint, there is a compelling case to align developer incentives with national food goals. By integrating temporary agricultural production into their land stewardship strategies, developers may reduce capital losses from idle land, fulfill Corporate Social Responsibility (CSR) targets, and enhance their brand reputation in sustainable development. Policymakers, in turn, can design regulatory tools such as tax exemptions, green land use credits, or planning fast-tracks for developers who participate in such initiatives. These symbiotic relationships require a governance ecosystem that supports temporary land use transitions while safeguarding long term property rights and development prospects. Countries such as the Netherlands and Singapore have pioneered such models through flexible zoning and institutional innovation, offering valuable lessons for Malaysia (Louw, 2008; Huang & Chan, 2018).

Accordingly, this conceptual study aims to identify the structural, regulatory, and technological perimeters that influence the utilization of developers' corporate real estate resources for short-term agricultural production in

Malaysia. By doing so, the study proposes a theoretical model that integrates real estate strategies with adaptive food security interventions and offers a new lens for understanding how developer owned land resources can be harnessed to meet immediate food security needs without compromising future urban growth. Through a critical synthesis of literature from real estate, agriculture, and policy domains, the study aims to construct a theoretical framework that is both practical and adaptable to Malaysia's evolving urban and food policy landscape. It challenges traditional land governance paradigms by advocating for adaptive, multi use land strategies and emphasizes the urgency of rethinking urban planning in light of food system vulnerabilities. The findings seek to inform policymakers, urban planners, and private stakeholders about the potential of a cross-sectoral approach to achieving food resilience and urban sustainability concurrently.

In conclusion, this conceptual study argues that the temporary utilization of developers' corporate real estate resources for agricultural production represents a feasible, innovative, and necessary response to Malaysia's interlinked crises of food insecurity and inefficient land use. While challenges related to policy rigidity, economic motivation, and zoning restrictions are acknowledged, the balance of evidence supports the strategic redirection of idle developer land into productive use. This approach not only fills a critical gap in both academic theory and national policy but also introduces a replicable model for other rapidly urbanizing nations facing similar structural dilemmas. Therefore, this paper contends that integrating developer held land into food production planning is not merely a complementary option, it is an essential component of Malaysia's sustainable urban and food security future.

LITERATURE REVIEW

Food security and the national agenda

Malaysia faces escalating food security challenges due to global supply chain disruptions, currency depreciation, and rapid urbanization. The 11th and 12th Malaysia Plans (RMK-11 and RMK-12) identify food security as a national priority, emphasizing the need to improve self-sufficiency ratios and promote localized food production systems (Economic Planning Unit [EPU], 2021). The Food and Agriculture Organization (FAO, 2021) defines food security as the condition in which all people, at all times, have physical and economic access to sufficient, safe, and nutritious food. Scholars such as Hashim and Roslan (2019) highlight the importance of integrating food security goals with urban planning strategies to mitigate reliance on imports and promote local resilience. This convergence of urban land use and food strategy sets the stage for exploring non-traditional agricultural sites, including idle corporate land resources.

Smart agriculture technologies

The emergence of smart agriculture, or precision farming, introduces innovative tools for maximizing agricultural yield while reducing environmental impact. Technologies such as sensors, drones, and AI powered analytics have transformed conventional farming into a data-driven enterprise (Barakabitze et al., 2017). In Southeast Asia, precision agriculture is increasingly viewed as a response to both land scarcity and labor shortages (Hu et al., 2019). In Malaysia, national initiatives such as Agropreneur Muda and MyGAP reflect governmental commitment to integrating digital tools into agriculture. However, implementation remains uneven, particularly in creating linkages between private landowners and agritech platforms (Shaharudin et al., 2020). These gaps highlight the need for a structured model to connect underutilized land with technological farming capabilities.

Developer land banks and interim land use

Land banking the acquisition and long-term holding of undeveloped land by real estate developers is a widespread strategy for managing future development potential. While financially prudent, this practice often results in land remaining idle for extended periods, especially during market downturns or regulatory hold-ups (Evans, 2004; Alexander, 2011). In Malaysia, such land banks are common in peri-urban zones, where land is agriculturally viable yet left fallow. Scholars argue that this underutilization represents a latent opportunity for temporary land uses that generate public value. Chapple et al. (2013) explore the concept of interim land use as

a strategy to activate dormant urban land through socially beneficial projects, including community farming. Within this context, developer land banks emerge as potential assets in addressing urban food insecurity.

Regulatory frameworks and institutional enablers

Rigid zoning laws and static land classification systems present significant obstacles to the adaptive reuse of corporate real estate. Institutional theory suggests that both formal regulations and informal norms shape land-use behavior, often limiting innovation in transitional land models (Monkkonen & Ronconi, 2013). Enabling policies such as temporary zoning adjustments, tax incentives, and cross-sector collaboration can support more flexible land utilization without compromising future development rights. Mbabazi et al. (2021) emphasize the role of interagency cooperation in land reform efforts. Global case studies offer relevant precedents: Singapore's Land Intensification Allowance and the Netherlands' urban farming zoning regulations both illustrate how adaptive governance can reconcile private property interests with public agricultural goals.

Conceptual gaps and research contribution

While substantial literature exists on urban agriculture, agritech innovation, and land use policy, few studies have examined the integration of private sector real estate resources into national food strategies. Most research has focused on state owned land or community gardens, overlooking the potential of idle corporate land for short term agricultural use. This conceptual gap calls for a new model that combines temporary land activation, private-sector collaboration, and smart agriculture implementation. Drawing on principles of collaborative governance (Ansell & Gash, 2008) and corporate social responsibility (CSR), this paper proposes a framework in which developer land banks are strategically mobilized through coordinated policy support and technological integration. The conceptual framework (Figure 1) synthesizes these elements into a structured model for aligning developer interests with national food security objectives.

DATA AND METHOD

This study adopts a qualitative conceptual research design to develop a framework for the temporary utilization of developer-owned land banks for agricultural production, aimed at strengthening national food security. Given the nature of conceptual inquiry, the research does not involve primary data collection but instead relies on a systematic literature review and document analysis to synthesize existing knowledge and policy insights.

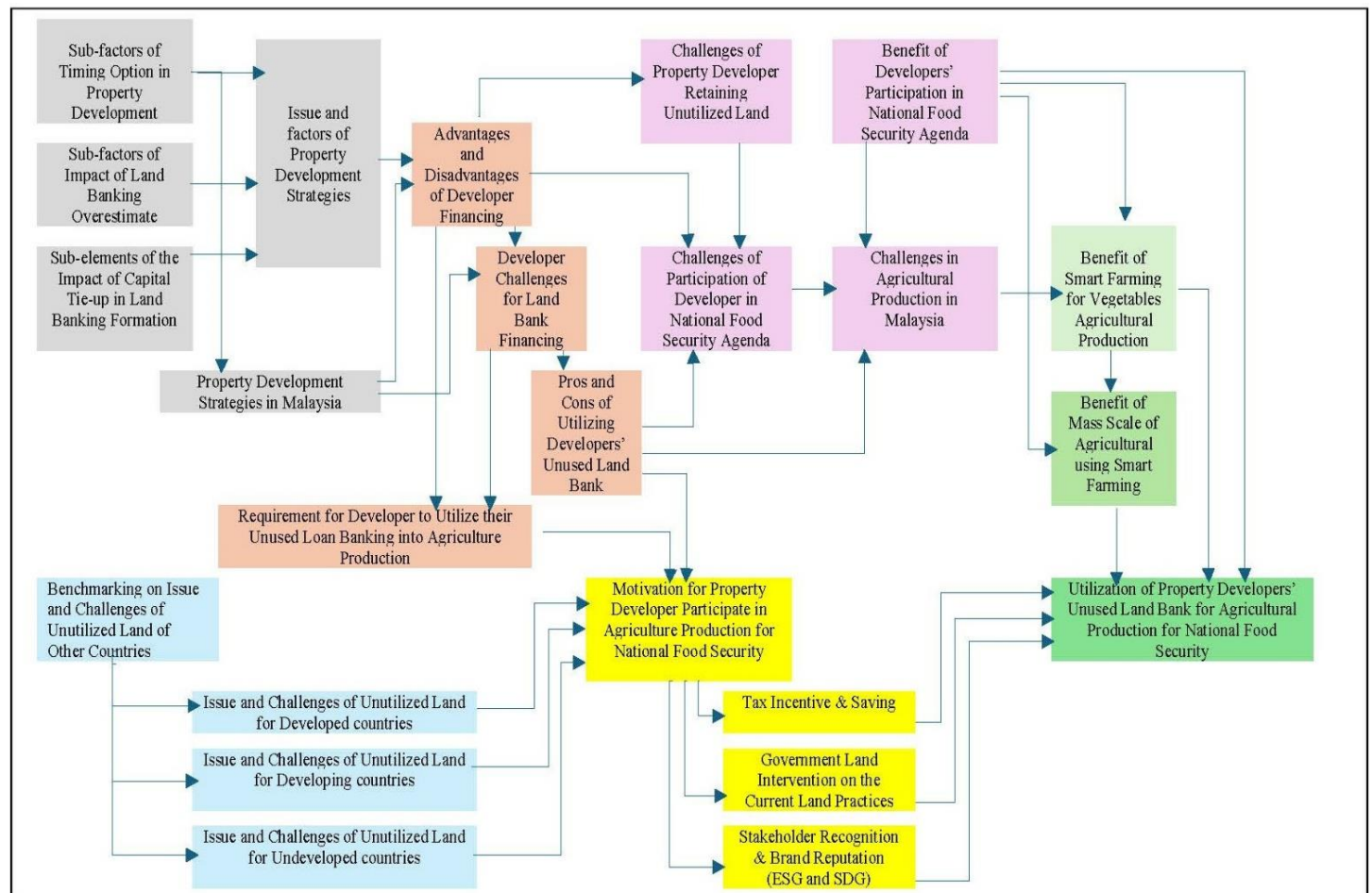
The data sources include peer-reviewed academic publications, government policy documents, and institutional reports, such as the *Twelfth Malaysia Plan (RMK-12)*, the *National Agrofood Policy (NAP 2021–2030)*, and global frameworks like those published by the Food and Agriculture Organization (FAO, 2021). These documents were selected based on their relevance to key thematic areas, including urban land use, smart agriculture, corporate land ownership, and food security policy.

A thematic analysis approach was employed to identify recurring patterns, gaps, and stakeholder dynamics within the literature. This involved open coding and categorical grouping of key concepts related to land banking practices, regulatory mechanisms, public-private collaboration, and technological integration in agriculture. Themes were analyzed through iterative comparison to ensure consistency with the research objectives.

The insights derived from this synthesis informed the development of the conceptual framework presented in Figure 1, which illustrates the interaction between corporate land availability, institutional enablers, developer motivations, agricultural strategies, and national food security outcomes. The framework serves as a strategic model to guide future empirical validation and policy implementation.

RESULTS AND FRAMEWORK

Figure 1: Conceptual idea on the utilization of developer's corporate real estate resources for agricultural production contributing to national food security



The conceptual framework presented in Figure 1 illustrates the strategic pathway through which developers' corporate real estate resources which is particularly idle land banks can be temporarily utilized for agricultural production to strengthen national food security. The framework begins with the identification of key input dimensions that influence this opportunity. First, the presence of idle corporate land banks serves as a physical asset base, representing large tracts of land held by property developers for future commercial development but which remain unutilized for extended periods due to strategic holding patterns, market cycles, or planning delays. These land parcels, often located in urban or peri-urban areas, hold untapped potential for short-term productive use.

The second input is the advancement of smart farming technologies, including modular systems such as vertical farming, hydroponics, sensor based irrigation, AI assisted crop monitoring, and drone surveillance. These tools reduce the traditional dependency on large rural spaces and labor intensive practices, making agriculture viable on smaller, non traditional urban plots. Thirdly, developer motivation and incentives act as a behavioral driver. Developers may be compelled by various internal and external motivations such as minimizing capital holding losses, fulfilling Corporate Social Responsibility (CSR) or Environmental, Social, and Governance (ESG) obligations, and enhancing their public image through sustainability engagement.

The fourth foundational input is the policy and institutional context, particularly the rigidity or flexibility of zoning laws and planning regulations that dictate land use classification. In Malaysia, for example, commercial land is often restricted from agricultural use unless formally rezoned, which can discourage temporary productive use of such spaces. These four dimensions form the structural and strategic basis of the conceptual model.

Progressing from inputs, the framework highlights a middle tier of enabling conditions that act as facilitators in operationalizing the transition from idle land to productive land. The most critical enabler is regulatory flexibility, which refers to the institutional willingness to create adaptive zoning codes, temporary land use permits, and urban food planning guidelines that allow dual or transitional land functions. Equally essential is public private collaboration, wherein local authorities, technology providers, community based organizations, and developers jointly design and manage land activation programs. Such partnerships ensure that agricultural deployment aligns with both urban development timelines and public interest goals. Additionally, institutional incentives including tax relief, fast track planning approvals, or green land use credits can materially encourage developer participation.

These enablers lead to the process stage of the framework which is the temporary agricultural deployment of idle land. This involves transforming non operational plots into productive sites using modular smart farming systems that are adaptable to changing urban constraints. Integration of digital agriculture and precision tools ensures cost efficiency, scalability, and environmental control, making short term cultivation practical within private commercial lots.

Finally, the framework concludes with three interconnected outcomes. First, such land use strategies directly contribute to national food security by increasing domestic production capacity, reducing dependency on imports, and creating distributed urban food nodes that are resilient to global disruptions. Second, developers achieve greater capital efficiency by deriving interim social and/or financial returns from non performing assets. This is especially significant in high cost holding environments where unused land generates sunk costs. Third, the model advances urban sustainability, aligning with the United Nations Sustainable Development Goals especially SDG 2 (Zero Hunger), SDG 11 (Sustainable Cities and Communities), and SDG 12 (Responsible Consumption and Production).

Collectively, the framework presents a practical, adaptive, and cross-sectoral approach for reimagining land governance and food planning in Malaysia. It conceptualizes how developer land, often sidelined in food security discourse, can become a central actor in the evolving urban-agriculture nexus.

This section presents a synthesis of key thematic findings derived from a comprehensive literature review on land banking, food security, urban agriculture, technological enablers, and governance challenges. These findings represent the conceptual outcomes of this study, serving as the foundation for the proposed framework. Table 1 below summarizes the major highlight points under each theme, along with supporting scholarly citations. The structured comparison illustrates the fragmented nature of current research and underscores the conceptual gap this study seeks to address.

Table 1: thematic findings and scholarly insights from the literature review

Theme	Findings	Citation	Scholarly Insight
Land Banking & Speculation	•Developers accumulate land for future projects. •Land often remains idle for years. •Idle peri-urban land retains agricultural potential.	Evans (2004); Alexander (2011); Chapple et al. (2013)	Idle land banks are not just financial reserves but represent untapped resources that could provide interim public value through agriculture.
Food Security	•Malaysia depends heavily on food imports. •Global disruptions and climate risks increase vulnerability. •Policies like RMK-12 and NAP 2.0 promote self-sufficiency.	EPU (2021); FAO (2021); Hashim & Roslan (2019)	Food security strategies emphasize state and farmer capacity but underutilize private-sector land resources.

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Urban Agriculture	•Urban/peri-urban farming improves food access. •Strengthens community resilience. •Research focuses on state/community land.	Shaharudin et al. (2020); Chapple et al. (2013)	Corporate-owned land remains largely overlooked, revealing a conceptual gap in scaling urban agriculture through developers.
Smart Agriculture Technologies	•Precision farming and sensors optimize yields. •Digital tools support resource efficiency. •Increasingly adopted in Southeast Asia.	Barakabitze et al. (2017); Hu et al. (2019)	Technology is available, but integration with idle developer land is weak, limiting its transformative potential.
Governance & Policy Frameworks	•Rigid zoning restricts adaptive reuse. •Static land classifications hinder flexibility. •International cases show innovative policy tools.	Monkkonen & Ronconi (2013); Mbabazi et al. (2021)	Governance innovation (incentives, zoning adjustments) is essential to align developer interests with food security goals.
Conceptual & Policy Gaps	•Literature often treats land, agriculture, and food separately. •Limited focus on private-sector land. • Gaps in integrating agritech with land policy.	Ansell & Gash (2008); Singh et al. (2019)	This study bridges land governance, agritech, and food policy, positioning developers as stakeholders in food security.

The findings presented in Table 1 synthesize six thematic domains derived from the literature review, each offering distinct insights that collectively inform the conceptual framework.

First, land banking and speculation practices show that while developers often retain idle land for future projects, this land retains latent agricultural potential. This reveals an opportunity to reconceptualize idle corporate land as a productive resource rather than an unutilized financial asset.

Second, food security emerges as a national policy priority in Malaysia, particularly in the Twelfth Malaysia Plan (RMK-12) and the National Agrofood Policy 2.0 (NAP 2021–2030). However, current strategies focus heavily on state-led initiatives and farmer productivity, leaving the private sector’s potential contributions largely unexplored.

Third, urban agriculture is recognized as a means of improving food access and community resilience, but scholarly attention is limited to community and state owned land. The neglect of corporate-owned land marks a conceptual gap that this study directly addresses.

Fourth, smart agriculture technologies such as precision farming, sensors, and digital platforms are well documented in enhancing productivity, yet integration with developer-held land remains minimal. This underscores the need for structured linkages between agritech actors and real estate stakeholders.

Fifth, governance and policy frameworks present both barriers and opportunities. Rigid zoning and static land classifications hinder adaptive use, whereas international precedents demonstrate how flexible governance and incentive schemes can reconcile developer interests with public agricultural goals.

Finally, the literature highlights clear conceptual and policy gaps, as existing research treats land use, food security, and agritech largely in isolation. The insights from these six domains converge in this study's contribution: a cross-sectoral framework that positions private developers as active stakeholders in strengthening national food security.

CONCLUSION

This conceptual study highlights the untapped potential of developers' corporate land banks as a strategic asset for enhancing Malaysia's food security. By synthesizing literature on land banking, food policy, smart agriculture, and governance, the study identifies a critical gap: private developers remain largely absent from food security strategies despite holding significant idle land resources.

The key finding is that developer-owned land banks, when activated through smart agriculture technologies and enabling regulatory frameworks, can directly contribute to national food resilience, capital efficiency, and sustainable urban development. The proposed framework demonstrates how temporary agricultural use can align with long-term development strategies, creating mutual benefits for both developers and society. This reframing position developer not as passive landholders but as active stakeholders in food security, bridging disciplinary silos across real estate, agriculture, and policy research.

Ultimately, the study calls for a paradigm shift in urban land governance recognizing idle corporate land as a dynamic public resource. For Malaysia, and other rapidly urbanizing nations, this approach offers a scalable pathway to balance urban growth with agricultural sustainability. Future empirical studies and policy pilots are needed to operationalize this vision, ensuring that developer land banks evolve into a central driver of national food security and sustainable development.

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