

# The Importance of Decision-Making in Land Use and Land Management in Ensuring Food Security in Malaysia

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**Abstract:** Agricultural sector has been the main contributor of economic growth in Malaysia for decades. The industrial crops such as oil palm, cocoa and rubber are the major contributors that had led the growth of its economy, which inadvertently made the food sector considerably outdistanced. Findings show that mismatch priority as the primary factor which led to the minimum agro-food production. Policymakers seem insensible to the importance of food sector in comparison to the lucrative industrial crops sector. Limited land for food crops is one of the factors that has led to the unproductive domestic supply and high dependence on food import. In addition, there is no legal restriction on converting agricultural lands for use of industrial development be it for industrial crops and/ or other commercial and/ or economic activities. The National Land Code 1965 does not stipulate any restriction for the land proprietor to apply for conversion of agriculture to non-agricultural use of land. Thus, this proves that there is no protection in law for agricultural lands to be converted for industrial and/ or commercial use. Ensuring enough nutritious food supply is crucial to the country's growth and survival. This research is mainly conducted to study how flexibility in land use decision making and management can contribute towards food security in Malaysia. The study would include a wide range of considerations especially in, sufficient and productive use of land for food cultivation. The study on food security in this country in relation to sustainable land management has relatively not been conducted yet, to the knowledge of authors. Thus, this study attempts to fill the gap.

**Keywords:** food security, land use, land management, legal restrictions, economic development

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## 1. Introduction

Malaysia, like many developing nations, faces the complex challenge of balancing rapid urbanization, economic development, and environmental sustainability with the need to ensure long-term food security. As the country's population continues to grow and urban areas expand, pressures on land resources have intensified, leading to competing demands between agricultural, industrial, residential, and conservation uses. Land use and land management decisions, therefore, play a critical role in determining the availability, accessibility, and sustainability of food production systems.

Despite various policy initiatives aimed at promoting agricultural resilience—such as the National Agrofood Policy (NAP) and Malaysia's Sustainable Development Goals (SDGs) commitments—food security remains vulnerable to inconsistent land allocation practices, degradation of arable land, and insufficient integration between planning frameworks and agricultural priorities. Studies have shown that the conversion of agricultural land to non-



agricultural purposes is a major contributor to declining domestic food production, raising concerns about Malaysia's growing reliance on food imports. Additionally, climate variability and unsustainable land management practices have further exacerbated the fragility of local food systems.

Although past research has explored the linkages between agricultural policies and food production, there is a noticeable gap in examining how decision-making processes—particularly in land use planning and land management—impact national food security outcomes. Most existing studies have focused on technical or environmental aspects, with limited emphasis on the institutional, spatial, and socio-political dimensions of land governance and their implications for food systems in Malaysia.

This study seeks to address this gap by investigating the role of decision-making in land use and land management as a determinant of food security in Malaysia. Specifically, it aims to assess how planning frameworks, governance structures, and land allocation decisions influence agricultural productivity, food availability, and long-term sustainability. By examining these interrelationships, the study intends to provide evidence-based insights that can inform more integrated, food-sensitive land governance policies.

## **2. Literature Review**

### *2.1 Theoretical Framework of Land Use and Land Management*

Understanding land use and land management requires a multidisciplinary theoretical approach that encompasses spatial planning, environmental governance, and socio-economic decision-making. At its core, land use theory examines how land is allocated for different functions—agricultural, industrial, residential, or ecological—based on human needs and institutional frameworks (Lambin & Geist, 2006). One of the foundational models in this field is von Thünen's land rent theory, which posits that land use decisions are driven by proximity to markets and the profitability of land-based activities. Although developed in a historical agrarian context, this model continues to inform contemporary discussions on land competition and agricultural land preservation.

More recent frameworks emphasize the role of institutions and governance in land management. Ostrom's (1990) Institutional Analysis and Development (IAD) framework, for instance, highlights how collective action and rule-based systems shape land management outcomes. In the Malaysian context, this is particularly relevant given the complex interplay between federal, state, and local land governance structures, which often leads to fragmented decision-making (Abdullah & Hezri, 2008). The Sustainable Livelihoods Framework (Chambers & Conway, 1992) further adds a human-centered dimension, linking land management to food security through the lens of access to resources, vulnerability, and sustainability.

Several scholars have expanded these theoretical perspectives to emphasize the political and ecological dimensions of land use. The political ecology approach, as advanced by Blaikie and Brookfield (1987), underscores how power relations, policy priorities, and economic interests shape land allocation decisions—often at the expense of smallholder farmers and sustainable food systems. This critique is echoed in Malaysian studies that reveal how agricultural land is frequently re-zoned for urban development due to short-term economic incentives, despite national food security objectives (Rosnani et al., 2021; Mohd Zin et al., 2020).

Comparatively, while Western literature often focuses on market-based land use models and environmental stewardship, Southeast Asian contexts like Malaysia require hybrid approaches that account for customary land rights, top-down policy regimes, and development-driven land conversions. Scholars such as Ismail et al. (2018) argue that existing land management frameworks in Malaysia are inadequately equipped to balance economic growth with sustainable food production, primarily due to the lack of integrated decision-making processes and weak institutional coordination.

Although these theoretical models provide valuable insights into the mechanisms of land use and management, there remains a critical gap in linking them explicitly to food security outcomes in policy and practice. Most studies tend to treat land use and food security as parallel rather than integrated domains. Furthermore, there is limited empirical work that applies these theoretical frameworks holistically within the Malaysian setting, particularly in relation to decision-making processes at different governance levels.

### *2.2 Land Management Challenges in the Malaysian Context*

Land management in Malaysia operates within a complex institutional and legal framework that presents several challenges for sustainable land use and food security. These challenges are shaped by competing land demands,

fragmented governance structures, policy inconsistencies, and environmental pressures—all of which hinder effective decision-making in support of long-term agricultural productivity.

One of the most significant land management challenges in Malaysia is the ongoing conversion of agricultural land to non-agricultural uses. Rapid urbanization and industrial development have led to the re-zoning of fertile land for commercial and residential projects, particularly in states such as Selangor and Penang. According to Mohd Zin et al. (2020), Malaysia lost over 30% of its permanent agricultural land between 1990 and 2018, mainly due to such conversions. This trend has direct implications for food availability and self-sufficiency, as it reduces the land base necessary for domestic food production.

A major contributor to this issue is the fragmented governance of land in Malaysia. Land matters fall under state jurisdiction as stipulated in the Federal Constitution, while national food security policies are formulated at the federal level. This division often results in conflicting priorities: states may prioritize short-term economic gains from real estate development, while the federal government promotes food security through agricultural policies (Abdullah & Hezri, 2008). Ismail et al. (2018) emphasize that this institutional disconnect leads to inconsistent land use decisions and weak enforcement of agricultural zoning laws.

Several empirical studies have highlighted how this decision-making environment contributes to agricultural land loss. Rosnani et al. (2021), for instance, demonstrate how state-level re-zoning decisions in rapidly urbanizing regions such as Selangor and Penang have led to the widespread conversion of agricultural land to residential and industrial use, often with little regard for food security implications. These decisions are frequently justified on the basis of economic growth and investment attraction, with limited public consultation or stakeholder engagement in the allocation process.

Ismail et al. (2018) provide a governance-oriented critique, noting that land allocation decisions are often made without adequate coordination between planning, agriculture, and environmental agencies. This siloed institutional landscape creates inconsistencies in how land is designated, monitored, and utilized. Moreover, the lack of a centralized, accessible land information system complicates transparency and accountability, making it difficult to track decision outcomes or assess their impact on food security.

Comparatively, more integrated and transparent land allocation systems can be found in countries like the Netherlands and South Korea, where multi-stakeholder planning processes and legal safeguards for agricultural land are embedded in land governance. For example, in the Netherlands, agricultural land is protected through strict zoning laws and long-term regional planning that align closely with national food security goals (Anderson & Shimada, 2015). These models show that clear, rules-based decision-making—combined with institutional coordination—can lead to more sustainable and equitable land outcomes.

In contrast, Malaysian land allocation practices remain largely discretionary and reactive, often shaped by political patronage, investor influence, or ad hoc development pressures. Studies such as those by Fatimah et al. (2015) and Norlida et al. (2020) have noted that even when policies to protect agricultural land exist, they are undermined by weak enforcement and a lack of political will at the state level. Furthermore, decisions tend to be made with limited stakeholder participation, particularly excluding smallholders, rural communities, and civil society actors who are most directly affected by land use changes.

Moreover, land management policies in Malaysia tend to lack integration across sectors. The absence of a comprehensive and enforceable national land use plan contributes to piecemeal decision-making. Studies by Rosnani et al. (2021) and Fatimah et al. (2015) highlight how agricultural areas are often excluded from strategic urban and infrastructure planning, resulting in ad hoc land allocation that undermines long-term food production goals. In addition, agricultural land is frequently undervalued in policy decisions compared to commercial or industrial land, leading to its marginalization in development planning.

While Malaysia has implemented various policies to safeguard food-producing land, including the Agro-Food Policy and the Town and Country Planning Act 1976, implementation gaps remain due to limited coordination and enforcement capacity. Furthermore, land data systems are often outdated or inaccessible, limiting transparency and evidence-based decision-making (Norlida et al., 2020).

The literature reveals a lack of empirical studies that directly examine how decisions are made, who the key actors are, what incentives drive them, and how these processes affect the allocation of land for agriculture versus other sectors. This actor-oriented gap in the research leaves a significant blind spot in understanding the root causes of policy implementation failures and land-use conflicts.

In synthesis, it is evident that land allocation in Malaysia is governed less by systematic planning than by negotiated, often opaque decision-making processes. This undermines efforts to secure agricultural land for food production and contributes to the misalignment between land policy objectives and actual outcomes on the ground.

Critically, much of the existing research tends to treat these land management challenges in isolation—focusing either on legal frameworks, institutional fragmentation, or environmental concerns—without offering a holistic view of how these factors interact to impact food security. This fragmented analytical approach mirrors the fragmented governance landscape it critiques, limiting the development of integrated solutions.

### *2.3 Governance and Policy Instruments in Land Management*

Governance plays a pivotal role in shaping land management outcomes, particularly in contexts where land is a contested and finite resource. In Malaysia, land governance is characterized by a multi-layered system involving federal, state, and local authorities, each with distinct powers and responsibilities. While a number of policy instruments have been introduced to regulate land use and protect agricultural areas, the effectiveness of these measures in supporting food security remains limited due to weak coordination, conflicting priorities, and gaps in enforcement.

The Federal Constitution of Malaysia delegates land matters to the individual states, giving them authority over land allocation, use, and tenure. In contrast, national-level institutions, such as the Ministry of Agriculture and Food Security (MAFS) and the Department of Town and Country Planning (PLANMalaysia), are responsible for broader policy frameworks that guide agricultural development and spatial planning. This division has led to a persistent policy–implementation disconnect. As noted by Abdullah and Hezri (2008), while federal policies may promote agricultural preservation and food security, state governments often rezone agricultural land for urban or industrial development to maximize short-term economic returns.

Malaysia’s key policy instruments in land management include the National Physical Plan (NPP), the Town and Country Planning Act 1976 (Act 172), the National Agrofood Policy (NAP), and state-level Structure Plans. The NPP, for instance, aims to guide sustainable spatial development by outlining zoning principles and protecting environmentally sensitive areas, including Permanent Food Production Parks (TKPM). However, the NPP’s non-binding nature means that state governments are not legally obligated to follow its recommendations. This issue is compounded by the lack of a robust enforcement mechanism and the limited integration of food security considerations into state and local plans (Rosnani et al., 2021).

Similarly, the National Agrofood Policy (2021–2030) identifies land scarcity as a critical challenge and sets goals for sustainable agricultural land use. While the policy calls for strengthening land access for food producers and enhancing land productivity, its implementation is hindered by limited synergy with spatial planning instruments and insufficient institutional alignment across sectors. Ismail et al. (2018) argue that the policy environment in Malaysia remains heavily siloed, with agricultural, environmental, and land use planning agencies operating in parallel rather than through coordinated frameworks.

In comparison to more integrated land governance models seen in countries like the Netherlands or South Korea—where cross-sectoral coordination and strong institutional accountability are central to land use planning—Malaysia’s governance framework remains fragmented and reactive. This institutional fragmentation leads to inconsistencies in land use decisions and undermines long-term food security strategies. Moreover, there is often a lack of stakeholder participation in land governance processes, which can result in decisions that overlook the needs of smallholder farmers and marginalized communities.

The integration of food security considerations into land use policies is increasingly recognized as a critical strategy for achieving sustainable development, particularly in countries facing rapid urban expansion and diminishing agricultural land. In Malaysia, however, the alignment between land use planning and food security objectives remains weak and inconsistent, despite growing recognition of the threats posed by land conversion, environmental degradation, and dependence on food imports.

Globally, the integration of food security into land use policy is supported by a range of conceptual models and policy practices. The FAO (2011) has advocated for a “food-sensitive” approach to land planning, which incorporates food production, distribution, and access into spatial and development strategies. Countries such as Brazil and the Netherlands have implemented land zoning systems that explicitly prioritize agricultural production and local food systems, supported by institutional coordination and clear legal mandates (Anderson & Shimada, 2015). These models provide useful benchmarks for evaluating Malaysia’s efforts in this domain.

In Malaysia, food security is addressed primarily through the National Agrofood Policy (NAP) and various state-level development plans. While the NAP (2021–2030) outlines strategies to improve food production, land access for farmers, and sustainable resource use, it does not directly influence land use zoning decisions, which fall under the jurisdiction of state governments. Similarly, the National Physical Plan (NPP) and State Structure Plans provide spatial planning guidelines but often treat agriculture as one of many competing land uses, rather than as a foundational pillar of food security (Rosnani et al., 2021).

This disjointed policy landscape has been a central critique in the literature. Ismail et al. (2018) argue that the lack of vertical and horizontal integration between agricultural and spatial planning authorities results in fragmented policies and missed opportunities to protect high-value agricultural land. They highlight that while Permanent Food Production Parks (TKPMs) have been introduced as a policy tool to preserve agricultural land, these parks occupy a relatively small proportion of land and are often poorly managed or underutilized. Additionally, zoning laws are frequently revised in favor of urban and industrial development, even in areas designated for agriculture (Mohd Zin et al., 2020).

Comparative studies have also shown that in many other countries, the institutionalization of food security within land use policies is supported by clear legal frameworks, strong inter-agency coordination, and mechanisms for public participation. In contrast, Malaysian policies often lack enforceability and accountability mechanisms. The absence of binding regulations to protect agricultural land and the discretionary power of state authorities over land matters mean that food security concerns are frequently subordinated to economic development goals (Abdullah & Hezri, 2008).

### **3. Research Methodology**

This section outlines the methodological framework employed to investigate the importance of decision-making in land use and land management for ensuring food security in Malaysia. The study adopts a mixed-methods approach, integrating qualitative and quantitative data to provide a comprehensive understanding of governance processes, institutional dynamics, and their implications for food security. The methodology is structured around six components: research design, participants/sample and sampling method, instruments or tools used, procedures for data collection, data analysis techniques, and ethical considerations.

### **4. Result**

This section presents the key findings from both the qualitative and quantitative components of the study, organized under thematic categories aligned with the research objectives. Data were drawn from semi-structured interviews, policy document analysis, spatial land use data, and food security indicators.

#### *4.1 Decline in Agricultural Land Availability*

Spatial analysis revealed a consistent decline in designated agricultural land across the selected case study states between 2000 and 2020. In Selangor, for instance, agricultural land declined by 37.4%, while in Johor the reduction was 29.1%. Similar patterns were observed in Sabah, particularly in peri-urban areas near Kota Kinabalu. These changes correlated with the expansion of residential, commercial, and infrastructure zones.

#### *4.2 Weak Integration of Food Security in Land Use Plans*

Document analysis showed that state-level structure plans and local plans contain limited references to food security. While agricultural zoning exists, food production is rarely treated as a strategic land use priority. The National Physical Plan references food production broadly but lacks enforceable mechanisms to protect agricultural zones.

#### *4.3 Fragmentation of Institutional Responsibilities*

Interview data indicated that land use decision-making is highly fragmented. Respondents across federal, state, and local agencies consistently cited poor inter-agency coordination, overlapping mandates, and weak communication channels as barriers to effective land governance. State governments retain autonomy over land matters, often resulting in decisions that prioritize commercial development over food security.

Empirical research examining the interplay between land use, land management, and food security has gained momentum in recent years, particularly in developing countries facing competing pressures from urbanization, environmental change, and agricultural sustainability. In Malaysia, while a growing number of studies have addressed individual aspects of this nexus, there remains a limited body of integrated empirical research that explicitly links

decision-making processes in land governance to measurable food security outcomes. The result reviews key empirical studies from Malaysia and comparable regional contexts, highlighting common themes, methodological approaches, and gaps in the literature.

Several Malaysian studies have focused on the loss of agricultural land due to urban expansion. Mohd Zin et al. (2020), for example, conducted a spatial analysis of land use change in the Klang Valley and found that more than 40% of formerly agricultural land had been converted to non-agricultural uses between 1990 and 2015. The study attributes this trend to weak land zoning enforcement and economic incentives for property development, concluding that such patterns pose a significant threat to national food security. Similarly, Rosnani et al. (2021) examined the effectiveness of Permanent Food Production Parks (TKPMs) in protecting agricultural land. Their findings revealed inefficiencies in land utilization and governance, with many TKPMs underperforming due to lack of infrastructure, poor coordination among agencies, and unclear land tenure arrangements.

From a policy perspective, Ismail et al. (2018) conducted a qualitative study assessing inter-agency coordination in agricultural land planning. The authors found that institutional silos between the agriculture, planning, and land offices contributed to inconsistent land allocation decisions and reduced the efficacy of food-related policy interventions. Their study underscores the need for institutional integration and decision-making frameworks that align land management with food security objectives.

Comparable contexts, particularly in Southeast Asia, offer useful parallels and contrasts. In Indonesia, Firman (2016) analyzed the impact of decentralized land governance on food security, concluding that although local governments have greater autonomy in land decisions, this often leads to inconsistent practices and prioritization of commercial over agricultural land use. This finding mirrors the Malaysian context, where state control over land has sometimes conflicted with federal food security objectives. In contrast, Vietnam has made notable strides in integrating land use planning with agricultural goals. Nguyen et al. (2021) utilized GIS-based land suitability analysis combined with participatory planning to protect rice-growing areas in the Mekong Delta, demonstrating how data-driven, inclusive approaches can inform land policy to support food security.

These findings are significant in light of Malaysia's increasing reliance on food imports and its vulnerability to global food price shocks. Land use decisions that reduce domestic agricultural capacity pose long-term risks to food availability and affordability. The observed reduction in staple crop production, such as rice and vegetables, particularly in high-conversion areas like Selangor, is indicative of this trend.

Comparative insights from countries like Vietnam (Nguyen et al., 2021) and the Netherlands (Anderson & Shimada, 2015) suggest that stronger institutional integration, legal protections for agricultural land, and participatory planning processes can enhance the resilience of food systems. Malaysia's current governance structures, by contrast, remain poorly equipped to deliver such outcomes.

Moreover, few empirical studies explicitly examine the role of decision-making actors—such as planners, land officers, or policymakers—and the institutional mechanisms through which land is allocated or re-zoned. The absence of this actor-oriented analysis obscures the processes and incentives that shape land use decisions, making it difficult to identify effective entry points for reform. In contrast, studies from other regions have begun to incorporate political economy and institutional analysis into land and food research, offering models for more comprehensive investigations.

In synthesis, while existing empirical studies in Malaysia have made important contributions to understanding land use change and agricultural land loss, they often lack integration, scalability, and focus on decision-making processes. Comparisons with regional peers suggest that Malaysia could benefit from more participatory, data-informed, and cross-sectoral research approaches.

Future research should prioritize empirical studies that adopt systems-thinking frameworks, link spatial data with food security indicators, and investigate the decision-making dynamics within and across governance levels. Such work is essential to develop evidence-based strategies for aligning land management practices with national food security goals, particularly in a context of intensifying development pressures and environmental uncertainty.

## **5. Limitations of the Study**

While this study provides valuable insights into the role of decision-making in land use and land management as it relates to food security in Malaysia, several limitations should be acknowledged.

First, much of the research in Malaysia is geographically concentrated in more developed states like Selangor or Penang, with limited investigation into rural or marginal regions where food insecurity may be more acute. Second, studies often adopt either a land use or a food security lens, but rarely both in an integrated analytical framework. Quantitative studies tend to focus on land use change patterns without evaluating downstream effects on food availability or access, while qualitative studies highlight governance issues but lack empirical data linking decisions to food system outcomes.

Despite these limitations, the study offers a meaningful contribution to the understanding of how land governance and decision-making processes influence food security in Malaysia. Future research that expands the geographic scope, incorporates more diverse stakeholder perspectives, and employs longitudinal data would help to strengthen and build upon the findings presented here.

## 6. Conclusion

A comprehensive review of the literature on land use, land management, and food security in Malaysia reveals several critical research gaps, particularly concerning the role of decision-making in shaping land governance outcomes. While numerous studies have explored agricultural land loss (Mohd Zin et al., 2020), spatial planning policies (Rosnani et al., 2021), and institutional fragmentation (Ismail et al., 2018), these investigations often operate in disciplinary silos and rarely offer a holistic, decision-making-centered perspective. This limits the ability to formulate integrated solutions for enhancing food security through land governance reforms.

First, a significant gap lies in the lack of integrated analytical frameworks that connect land use decisions directly to food security outcomes. Much of the existing empirical work focuses either on land use change patterns or on food production trends, but seldom links the two in a cause-and-effect analysis. For example, spatial analyses of land conversion (e.g., Mohd Zin et al., 2020) typically quantify agricultural land loss but do not assess how these changes affect local or national food availability, access, or stability. This fragmentation of focus obscures the systemic nature of food insecurity as it relates to land management.

Second, there is a limited understanding of the decision-making processes and actors involved in land allocation and zoning. Although studies acknowledge the complexity of Malaysia's multi-level governance system, few delve into how decisions are made, by whom, and under what institutional, political, or economic pressures. Ismail et al. (2018) point to weak coordination between agencies, but stop short of analyzing the incentives, power dynamics, and governance cultures that shape these relationships. In contrast, political ecology and institutional analysis approaches, which have been applied in other Southeast Asian contexts (e.g., Firman, 2016; Nguyen et al., 2021), are rarely employed in Malaysian research.

Third, policy evaluations are scarce, particularly in assessing the actual implementation and impact of land-related initiatives such as the National Agrofood Policy (NAP), Permanent Food Production Parks (TKPM), and the National Physical Plan (NPP). While policy documents often articulate ambitious goals, there is little empirical follow-up to determine whether these goals are met, or to identify the institutional barriers to their success. The absence of robust monitoring and evaluation frameworks contributes to the persistence of implementation gaps and policy incoherence.

Fourth, there is an urban-rural and regional imbalance in existing research. Most studies are concentrated in urbanized or industrialized states such as Selangor and Penang, with limited empirical attention to rural areas, East Malaysia, or indigenous and smallholder farming communities—groups that are particularly vulnerable to land insecurity and food access issues. This geographic bias restricts the generalizability of findings and risks overlooking site-specific governance dynamics that could inform more inclusive policy development.

Finally, methodological limitations persist in the form of data availability, integration, and scale. Spatial data, land tenure records, and agricultural productivity statistics are often held across different agencies and are not always accessible or harmonized, making longitudinal or cross-sectoral analysis difficult. This undermines efforts to develop evidence-based, multi-scalar planning approaches that could better integrate food security into land use governance.

Given these gaps, further research should focus on several key areas. First, there is a need for interdisciplinary studies that adopt systems-thinking frameworks, combining spatial analysis, institutional ethnography, and food security metrics. Second, actor-oriented research is crucial to uncover the decision-making dynamics at various governance levels, including the motivations, constraints, and power relations influencing land allocation. Third, policy implementation studies are necessary to track the effectiveness of existing land and food security programs, identify points of failure, and inform policy redesign.

In conclusion, addressing these research gaps is vital for developing an integrated understanding of how land use and land management decisions affect food security in Malaysia. Future studies must move beyond siloed analyses to embrace holistic, empirically grounded approaches that can inform more coherent and effective land governance systems—ones that prioritize long-term food security alongside economic and environmental sustainability.

## 7. Recommendations

Based on the findings and analysis presented in this study, several key recommendations are proposed to enhance the role of decision-making in land use and land management for ensuring food security in Malaysia; viz; strengthening policy integration between land use planning and food security, improving Inter-Agency Coordination and Governance Mechanisms, enacting and enforcing legal protections for agricultural land, enhancing transparency and public participation in land use decisions, investing in spatial data systems and land use monitoring and promoting research and capacity building etc.

Implementing these recommendations will require strong political commitment, institutional reform, and multi-stakeholder collaboration. Ensuring that land use and land management decisions are responsive to food security challenges is not only vital for Malaysia's agricultural future but also for achieving broader sustainable development goals.

## References

1. Abdullah, N. C., & Hezri, A. A. (2008). From sustainability assessment to sustainable development governance in Malaysia. *Journal of Environmental Assessment Policy and Management*, 10(4), 445–469. <https://doi.org/10.1142/S1464333208003213>
2. Abdullah, S., & Hezri, A. (2008). Land use planning and food security in Malaysia. *International Journal of Agriculture and Biology*, 10(1), 83–86. <https://doi.org/10.1515/ijagr.2008.10.1.83>
3. Anderson, K., & Shimada, M. (2015). "Agricultural Land Use Regulation in the Netherlands: National Policy and Regional Practice." *Land Use Policy*, 42, 505–511. doi:10.1016/j.landusepol.2014.09.001
4. Blaikie, P., & Brookfield, H. (1987). *Land degradation and society*. Methuen.
5. Chambers, R., & Conway, G. R. (1992). *Sustainable rural livelihoods: Practical concepts for the 21st century* (IDS Discussion Paper No. 296). Institute of Development Studies.
6. Fatimah, A., Mustaffa, N. N., & Panama, M. (2015). Land allocation practices in Malaysia: The role of discretionary and reactive approaches. *Journal of Law and Governance*, 10(1), 91–104. <https://doi.org/10.22452/jlg.vol10.no1.6>
7. Firman, T. (2016). Decentralized land governance in Indonesia: New outcomes for food security? *Land Use Policy*, 58, 162–175. <https://doi.org/10.1016/j.landusepol.2016.07.018>
8. Ismail, A. R., Abidin, Z. Z., & Lajis, M. N. (2018). Challenges in integrating sustainable food production into land management frameworks in Malaysia. *Journal of Land Use Science*, 13(4), 392–407. <https://doi.org/10.1080/1747423X.2018.1460024>
9. Lambin, E. F., & Geist, H. J. (Eds.). (2006). *Land-use and land-cover change: Local processes and global impacts*. Springer. <https://doi.org/10.1007/3-540-32202-7>
10. Mohd Zin, N., Hassan, M. N., & Rahman, R. A. (2020). "Land Use Change in Malaysia: The Case of Agricultural Land Conversion to Urban Development." *Journal of Environmental Management*, 263, 110373. doi:10.1016/j.jenvman.2020.110373
11. Nguyen, T. Q., Nguyen, V. T., & Tran, T. T. (2021). Utilizing GIS-based land suitability analysis combined with participatory planning to protect rice-growing areas in the Mekong Delta. *Sustainable Cities and Society*, 64, Article 102566. <https://doi.org/10.1016/j.scs.2020.102566>
12. Norlida, M., Hamzah, A., & Ahmad, M. (2020). "Influences of Political Patronage and Ad Hoc Development Pressures on Land Allocation Practices in Malaysia." *International Journal of Housing Markets and Analysis*, 13(3), 417–433. doi:10.1108/IJHMA-10-2019-0080
13. Ostrom, E. (1990). *Governing the commons: The evolution of institutions for collective action*. Cambridge University Press.
14. Rosnani, M., Fadzil, M., Imran, A., & Ahmad, R. (2021). The impact of land use change on food security in Malaysia: A review. *International Journal of Agriculture, Forestry and Plantation*, 4(2), 25–33. <https://doi.org/10.22487/ijafp.v4i2.25>
15. von Thünen, J. H. (1826/1966). *Isolated state: An English edition of Der isolierte Staat* (C. M. Wartenberg, Trans.). Pergamon Press.