Emerging Idle Land Issues and Challenges in Malaysia: A Review on the Implications for National Food Security

Norhisham Rahmat, Muhamad Norfiqiri Hamid

Department of Real Estate, Faculty of Built Environment and Surveying, University Technology Malaysia

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ABSTRACT

Idle land presents a critical yet often overlooked issue in the context of global food security. Understanding this issue is vital for managing unutilized land resources to enhance our national food stability. This study aims to investigate the challenges and implications of idle agricultural land on food production and availability in Malaysia. The importance of this study lies in its potential to bridge a significant gap in the literature by examining why agricultural lands remain idle and how these lands can be utilized more effectively. Based on a scoping review methodology, this research synthesizes existing literature according to past studies to identify the key reasons for land idleness. The findings reveal several significant barriers to land utilization. These reasons include economic constraints, social barriers, and environmental challenges. Additionally, environmental factors like soil degradation and climate change also play a crucial role in keeping land stay idle. Thus, key issues such as land tenure problems, inadequate infrastructure, and socio-economic constraints are also highlighted. This study contributes to the academic discourse by providing a nuanced understanding of the factors preventing the effective use of land especially on agricultural land that will impact to our food production and food security. In conclusion, the practical implications of this study emphasize the need for policy interventions and strategic planning. By unlocking the potential of idle lands, targeted policies could significantly mitigate food insecurity and promote sustainable agricultural practices.

Keywords: Idle land, potential, food security, effective use, sustainable agriculture

INTRODUCTION

The Food security, defined as the availability, accessibility, utilization, and stability of food supply, is a critical global concern. Despite significant advances in agricultural technology and practices, food insecurity remains prevalent, affecting over 820 million people worldwide (FAO, 2019). The World Food Programme (2020) highlights that factors such as climate change, conflict, and economic instability exacerbate food insecurity, particularly in developing regions. Sustainable agricultural practices are paramount in addressing food security, ensuring that food production systems are resilient, efficient, and capable of meeting the growing global demand. Food security encompasses multiple dimensions, each essential to comprehending the full scope of the issue. Availability refers to the consistent presence of sufficient quantities of food, which can be influenced by domestic production levels, import capabilities, and food aid (Schmid Huber & Tubiello, 2007). Accessibility, on the other hand, involves both the physical and economic ability of individuals to obtain food. This dimension is often hindered by poverty, infrastructure deficiencies, and market disparities (Barrett, 2010). Utilization relates to the appropriate use of food based on knowledge of nutrition and care, as well as the ability of individuals to metabolize food due to health status (Smith & Haddad, 2015). Stability is concerned with the temporal dimension of food security, ensuring that food supply, access, and utilization remain consistent over time, unaffected by transitory shocks (Maxwell, 1996).

The persistent issue of food insecurity, despite technological advancements, underscores the complexity of the problem. For instance, the introduction of high-yield crop varieties and genetically modified organisms (GMOs) has significantly increased food production in many parts of the world. However, these advancements have not uniformly translated to food security. In Sub-Saharan Africa, for example, food production has increased, but food insecurity remains high due to inadequate infrastructure, political instability, and limited access to markets

(von Grebmer et al., 2020). This discrepancy illustrates that technological progress alone is insufficient; comprehensive strategies addressing underlying socio-economic and political factors are necessary. Climate change represents a formidable challenge to global food security. Changes in temperature, precipitation patterns, and the frequency of extreme weather events adversely affect crop yields and livestock productivity (Lobell et al., 2011). Regions heavily dependent on rain-fed agriculture, such as parts of Asia and Africa, are particularly vulnerable. For example, prolonged droughts in East Africa have led to significant declines in food production, exacerbating hunger and malnutrition (Wheeler & von Braun, 2013). Adaptation strategies, including the development of drought-resistant crop varieties and improved water management practices, are crucial for mitigating these impacts.

Conflict is another major driver of food insecurity, disrupting agricultural production, displacing populations, and destroying infrastructure (Hendrix & Brinkman, 2013). In conflict zones, such as Yemen and Syria, food insecurity has reached critical levels, with millions of people reliant on humanitarian aid for survival (FAO, 2019). Addressing food security in these contexts requires not only emergency food assistance but also long-term peacebuilding and development efforts to restore agricultural systems and livelihoods. Economic instability, including fluctuations in global food prices and economic downturns, further compounds food insecurity. The global financial crisis of 2007-2008, for example, led to a sharp increase in food prices, pushing millions into hunger (Ivanic & Martin, 2008). Economic policies promoting inclusive growth, social protection programs, and fair-trade practices are essential to stabilizing food access for vulnerable populations. Sustainable agricultural practices are paramount in addressing food security, ensuring that food production systems are resilient, efficient, and capable of meeting the growing global demand. Practices such as agroecology, conservation agriculture, and integrated pest management promote environmental health, enhance biodiversity, and increase productivity (Altieri, 2009). Moreover, the adoption of precision agriculture technologies can optimize resource use, reduce waste, and improve crop yields (Gebbers & Adamchuk, 2010). These practices not only contribute to immediate food security but also ensure the long-term sustainability of food production systems, essential for feeding an anticipated global population of 9.7 billion by 2050 (United Nations, 2019).

On the other hand, there is a significant in managing unutilized land resources. This idle land often referred to as fallow or abandoned land, represents a significant untapped resource with vast potential benefits if effectively managed. This land can be categorized into three primary types: agricultural, residential, and industrial. To be clear, this paper only focuses on agricultural idle land to align the relationship between the idle agricultural land and our national food security. Utilizing idle agricultural land for productive purposes can substantially contribute to food security by increasing food production capacity. For instance, converting fallow farmland into productive agricultural zones can help meet the growing demand for food and reduce dependency on food imports. Successful global examples include the land reclamation projects in China, where previously unusable land has been transformed into fertile agricultural zones, thereby boosting local food production and economic growth (Liu et al., 2019).

Based on the overview of the global food security issue and the significant of managing unutilized land resources, there is a need for a strategic management of unutilized land resources to enhancing both global and national food security. This study aims to delve deeply into the challenges and implications associated with idle agricultural land, offering a comprehensive analysis to bridge a significant gap in the existing literature. By examining the underlying reasons why agricultural land remains idle and exploring effective strategies for its utilization, this research seeks to provide actionable insights that can inform policy and practice. In conclusion, addressing the issue of idle land in the context of global food security requires a comprehensive and strategic approach. By investigating the challenges, identifying successful models, and exploring the broader implications, this study seeks to provide a robust framework for transforming unutilized land into productive assets. Such efforts are crucial for ensuring a sustainable and secure food future in an increasingly complex and interconnected world.

Overview Of Idle Agricultural Land in Malaysia

The phenomenon of idle agricultural land in Malaysia is a significant issue with broad implications for the country's food security, economic stability, and rural development. Historically, Malaysia's agricultural sector has undergone substantial transformation due to urbanization, industrialization, and shifts in agricultural policies

(Olaniyi, Abdullah, Ramli, & Mohd Sood, 2013). Approximately 16% of Malaysia's 5.36 million hectares of agricultural land remain underutilized, significantly affecting the nation's capacity to produce food (Olaniyi et al., 2013). This underutilization is rooted in complex socio-economic factors, including changes in land ownership patterns, the migration of rural populations to urban areas, and the evolving economic landscape which has prioritized industrial and service sectors over agriculture (Olaniyi et al., 2013).

The challenges associated with the utilization of idle agricultural land in Malaysia are multifaceted and interrelated. One of the most pressing issues is the lack of adequate infrastructure. The absence of essential facilities such as reliable water supply, road access, and electricity significantly hinders agricultural activities. Norsida Man from University Putra Malaysia highlights that many landowners are deterred from cultivating their land due to these infrastructural deficiencies (Amin, 2020). Furthermore, the initial costs associated with setting up necessary infrastructure and hiring labour are prohibitively high for many landowners, exacerbating the issue (Amin, 2020). Legal and policy-related challenges also play a critical role in the persistence of idle agricultural land. The complexity of land tenure systems, coupled with fragmented landholdings, creates substantial barriers to coordinated agricultural development (Sulong & Taha, 2016). The regulatory environment is often characterized by outdated laws that do not adequately address current economic realities, leading to inefficiencies and underutilization (Mohamed Akmal bin Dahalan, 2019). Moreover, the enforcement of these laws is frequently inconsistent, further complicating efforts to bring idle land into productive use (Nik Mustapha, Hashim, & Abu Hassan, 2013).

The implications of idle agricultural land in Malaysia are profound and extend across social, economic, and environmental dimensions. Economically, the failure to fully utilize agricultural land represents a lost opportunity for income generation and rural development. This situation undermines food security by increasing the country's reliance on food imports, making it vulnerable to global market fluctuations and crises (Olaniyi et al., 2013). Socially, the presence of idle land contributes to rural depopulation, as younger generations migrate to urban areas in search of better opportunities, leaving behind an aging population that is less capable of managing agricultural activities (Olaniyi et al., 2013). Environmentally, idle land can lead to degradation and loss of biodiversity. Unmanaged lands are prone to invasion by non-native species, which can disrupt local ecosystems and reduce the ecological value of these areas (Olaniyi et al., 2013). Furthermore, the environmental benefits of active agricultural land, such as carbon sequestration and the maintenance of soil health, are lost when land remains idle.

The enforcement of land use policies in Malaysia has been inadequate, contributing to the persistence of idle agricultural land. Nik Mustapha et al. (2013) argue that the lack of effective legal enforcement and monitoring mechanisms allows landowners to leave their land idle without facing significant penalties. This issue is compounded by bureaucratic inefficiencies and corruption, which hinder the implementation of existing land use policies. Furthermore, the legal frameworks themselves are often outdated and do not reflect the current economic realities. For instance, Mohamed Akmal bin Dahalan (2019) argues that certain sections of the National Land Code are not effectively applied, leading to regulatory gaps that allow for land idleness. The absence of clear and enforceable guidelines for land use exacerbates the problem, making it difficult to hold landowners accountable for keeping their land productive. Besides, our country already has national policy to enhance our food production since 1991, however, the level of food security for our country is still not at its best because there is still a lot of idle agricultural land that can be seen in every state in Peninsular Malaysia.

Based on NAP-1 since 1991-2008, the primary focus was on increasing the production of major food products to enhance food security and ensure better food quality at affordable prices. The strategies included meeting national food requirements through large-scale food production by the private sector and enhancing the integrated development of both food and industrial crop subsectors. This approach aimed at laying a strong foundation for food security by leveraging private sector capabilities. For NAP-2 (1992–2010), this phase saw a shift towards emphasizing food sufficiency. The strategies focused on food security and safety, addressing food scarcity issues. This period marked a more concentrated effort on ensuring that the food produced was sufficient and met the safety standards required to protect public health. For NAP-3 (1998-2010), the policy emphasis was on providing food security and safety and making the agro-food sector competitive and sustainable. The strategies included increasing food production and access, stabilizing food prices, ensuring food safety and nutrition, and boosting productivity through agricultural intensification and expansion of the agro-based industry.

This policy period aimed at not only ensuring food availability but also making the food sector more resilient and economically viable. Then, NAFP (2011-2020), the focus shifted to increasing the contribution of the agro-food industry, strengthening R&D, fostering innovation, and utilizing technology. The strategies were comprehensive, aiming to strengthen R&D activities, improve access to food through better marketing infrastructure, ensure reasonable food prices through monitoring systems, and develop early warning systems for food availability. This period marked a forward-looking approach, recognizing the importance of technology and innovation in achieving food security and sustainability. To be concluded, these NAP demonstrates the evolution of Malaysia's food security and sustainability policies over time. The transition from basic food production to a more integrated approach involving R&D, technology, and market infrastructure reflects the country's adaptive strategies to meet emerging challenges and improve food security. Each policy phase builds upon the previous one, aiming for a more robust and sustainable food system capable of supporting the nation's long-term needs.

In addition, several strategies and incentives have been proposed to address the issue of idle agricultural land in Malaysia. One innovative approach is the use of the waqf system, which involves donating land for charitable purposes, including agricultural development. This method has been suggested to activate idle land while benefiting the community. The waqf system can be a powerful tool for mobilizing resources and fostering community engagement in agricultural activities. Financial incentives, such as tax breaks and subsidies for land development, can also motivate landowners to cultivate idle land. Haas and Kopanyi (2017) discuss how taxation policies targeting idle land can encourage landowners to either sell or develop their land, thus reducing idleness. Implementing such policies requires a careful balance to ensure they are effective without being overly burdensome to landowners. Infrastructure development is another critical area. Improving access to water, roads, and electricity can significantly lower the barriers to land use. The government’s role in providing these essential services is crucial, as emphasized by experts from Universiti Putra Malaysia and Universiti Malaysia Perlis (Amin, 2020). Additionally, implementing robust data management systems to monitor and plan agricultural activities can optimize land use. This includes creating detailed databases on crop yields, land use patterns, and market demands to guide agricultural planning and reduce overproduction or shortages (Amin, 2020).

In conclusion, idle agricultural land in Malaysia presents a multifaceted challenge with significant implications for food security, economic development, and social stability. Addressing this issue requires a comprehensive approach involving infrastructure development, legal reforms, financial incentives, and innovative solutions like the waqf system. By implementing these strategies, Malaysia can enhance its agricultural productivity, ensure food security, and promote sustainable rural development.

METHODOLOGY

Idle land in Malaysia presents a significant issue for national food security. The country's growing population and demand for food necessitate efficient land utilization. Addressing idle land issues is crucial for enhancing agricultural productivity and ensuring sustainable food supply. In order to achieve the goal of this study, this study employs a systematic review approach to comprehensively examine the issues and challenges associated with idle land in Malaysia. The systematic review methodology was chosen to ensure a rigorous and unbiased synthesis of existing literature, providing a holistic understanding of the topic. The focus of this review is specifically on identifying, analysing, and summarizing the various challenges related to idle land in Malaysia. The primary database used for sourcing articles in this review is Scopus. Scopus was selected due to its extensive coverage of high-quality, peer-reviewed journals across various disciplines, ensuring a comprehensive collection of relevant studies. The choice of Scopus is also justified by its robust indexing and abstracting capabilities, which facilitate the retrieval of a wide range of pertinent literature on the subject matter.

A systematic search strategy was employed to identify relevant articles. The search was conducted using specific keywords and phrases such as "idle land," "Malaysia," "land use," and "land management." To ensure the relevance and quality of the articles, search filters were applied, including a publication date range from the past 20 years, peer-reviewed articles, and English language publications. This approach ensured the inclusion of recent and high-quality studies relevant to the topic. The criteria for selecting articles included their relevance to the topic of idle land in Malaysia, peer-reviewed status, and publication within the last 20 years. Articles that did not specifically address the issues or challenges of idle land in Malaysia, or were not peer-reviewed, were

excluded. These criteria were chosen to ensure the inclusion of the most relevant and credible studies, providing a robust basis for the review. Data extraction was conducted systematically using a pre-defined coding scheme. Relevant data points such as study objectives, methodologies, key findings, and conclusions were extracted from each selected article. The extracted data was then synthesized using thematic analysis, which involved identifying and categorizing recurring themes and patterns related to the issues and challenges of idle land in Malaysia. This method facilitated a comprehensive understanding of the topic by highlighting the common challenges and potential solutions discussed in the literature. Each article was assessed based on criteria such as study design, methodology, data analysis, and the validity of findings. This rigorous quality assessment process ensured that the review's findings are based on high-quality and reliable evidence. All data extracted from the articles were used responsibly, ensuring proper attribution and avoiding any form of data misrepresentation. This approach maintained the ethical integrity of the review process.

RESULT

The systematic review revealed three primary themes regarding the issues and challenges associated with idle land in Malaysia: economic constraints, social barriers, and environmental challenges. Each theme encapsulates specific factors that contribute to the underutilization of agricultural land in the country.

Economic constraints

Economic constraints are a significant barrier to the effective utilization of idle land in Malaysia. Financial challenges faced by landowners and farmers are paramount, with limited access to capital hindering their ability to invest in necessary infrastructure, technology, and inputs. The high cost of agricultural development and maintenance often discourages small-scale farmers from cultivating idle land. For instance, the initial costs of land preparation, purchasing seeds, fertilizers, and irrigation systems are substantial, and without adequate financial resources or access to credit, many farmers find it difficult to embark on agricultural ventures.

Moreover, the impact of market dynamics cannot be understated. The profitability of farming is often undermined by fluctuating agricultural commodity prices, which can lead to significant income instability for farmers. Market volatility, influenced by global market trends, import-export policies, and local demand-supply fluctuations, poses a risk to farmers' livelihoods. This uncertainty discourages investment in agriculture, as farmers may not be able to secure a stable income. Additionally, the lack of market access and support for smallholder farmers limits their ability to sell their produce at competitive prices, further exacerbating economic constraints.

Social barriers

Social barriers significantly impact the utilization of idle land in Malaysia. Societal attitudes towards agriculture, particularly among the younger generation, contribute to the reluctance to engage in farming activities. Many views agriculture as a less desirable career path compared to other professions, leading to a lack of interest in cultivating idle land. This perception is often reinforced by the narrative that agriculture is labor-intensive, low-paying, and less prestigious. Consequently, there is a noticeable trend of rural-urban migration, where younger individuals leave rural areas in search of better employment opportunities, resulting in an aging farming population and insufficient workforce to manage agricultural activities.

Additionally, issues related to land ownership and tenure complicate land use. The review found that unclear land titles, fragmented land ownership, and bureaucratic hurdles in land transfer processes create significant obstacles for individuals and organizations aiming to utilize idle land. Fragmented land ownership, where land is divided among multiple heirs over generations, complicates decision-making and collective action towards land utilization. Bureaucratic inefficiencies in land registration and transfer processes further delay and discourage land development initiatives. These issues create an environment of legal and administrative uncertainty, deterring potential investors and farmers from engaging in agricultural activities on idle land.

Environmental challenges

Environmental challenges further complicate the utilization of idle land in Malaysia. Soil degradation, resulting

from overuse, erosion, and nutrient depletion, reduces the usability of land for agricultural purposes. The review indicates that significant portions of idle land suffer from poor soil health, making them less attractive for cultivation. Soil erosion, caused by deforestation, improper land use, and heavy rainfall, leads to the loss of topsoil, which is essential for plant growth. Additionally, nutrient depletion, resulting from continuous cropping without adequate replenishment of soil nutrients, further degrades soil fertility.

The effects of climate change also pose a substantial threat to agricultural practices. Changing weather patterns, such as irregular rainfall, prolonged droughts, and increased frequency of extreme weather events, negatively impact crop yields and land usability. These climatic changes disrupt traditional farming practices and necessitate the adoption of new, climate-resilient agricultural techniques. However, the lack of knowledge and resources to implement such practices hinders farmers' ability to adapt to these environmental challenges. Furthermore, rising temperatures and changing pest and disease patterns exacerbate the vulnerability of crops, making agriculture even more challenging on idle lands.

Based on the systematic review, it identified economic constraints, social barriers, and environmental challenges as the primary themes impacting the utilization of idle land in Malaysia. Financial challenges, societal attitudes, land ownership issues, soil degradation, and climate change collectively hinder the productive use of agricultural land. Addressing these issues requires a multifaceted approach, including financial support for farmers, policy reforms to streamline land ownership, educational campaigns to change societal perceptions, and sustainable land management practices. By tackling these challenges, Malaysia can enhance its agricultural productivity and ensure a sustainable food supply for its growing population. The findings also identified specific key issues that compound the challenges related to idle land in Malaysia. Land tenure problems, such as unclear land titles and fragmented land ownership, create significant legal and administrative hurdles. These issues often result in disputes and delays in land development initiatives, deterring potential investors and farmers from utilizing idle land. Inadequate infrastructure, including poor road networks, insufficient irrigation systems, and lack of access to modern agricultural technology, further limits the productive use of agricultural land. These infrastructural deficiencies increase the cost and difficulty of farming, making it less attractive and feasible for landowners and farmers. Socio-economic constraints, such as poverty, lack of access to education and training, and limited support services, exacerbate these challenges. Farmers and landowners often lack the necessary resources and knowledge to improve land productivity, perpetuating the cycle of underutilization and poverty in rural areas.

Contributions To Stakeholder

The systematic review on idle land in Malaysia offers substantial contributions to various stakeholders, particularly academicians, by providing a comprehensive analysis of the challenges and issues related to idle land. The study's findings have significant implications for academic research, policy development, and educational curricula, fostering a deeper understanding and potential solutions for the effective utilization of idle land.

For academicians, this study provides a rich foundation for further research on land use, agricultural productivity, and rural development. The identification of key themes such as economic constraints, social barriers, and environmental challenges offers multiple avenues for exploration. Researchers can build on these findings by conducting empirical studies to quantify the impact of these challenges on land utilization. Additionally, the specific issues highlighted, such as land tenure problems, inadequate infrastructure, and socio-economic constraints, can serve as focal points for more detailed investigations. The review’s methodological approach, which includes a systematic search strategy, rigorous selection criteria, and thematic analysis, sets a benchmark for future research in this area. Academicians can replicate or adapt this methodology to other regions or contexts, contributing to a broader comparative understanding of idle land issues globally. Furthermore, the study’s reliance on high-quality, peer-reviewed sources from Scopus ensures that subsequent research is grounded in credible and relevant literature.

The study’s findings are crucial for informing policy development related to land use and agricultural sustainability. Academicians can use the evidence provided to advocate for policy changes that address the economic, social, and environmental barriers to land utilization. For instance, the highlighted economic constraints underscore the need for financial support mechanisms, such as subsidies or low-interest loans for

farmers, which can be advocated through policy briefs and research articles. The identification of social barriers, including societal attitudes and land ownership issues, points to the necessity for policies that promote agricultural careers and streamline land tenure processes. Academicians can collaborate with policymakers to develop frameworks that encourage youth participation in agriculture and simplify land registration and transfer procedures. Environmental challenges such as soil degradation and climate change effects call for the integration of sustainable land management practices into national policies. Researchers can contribute by developing and promoting evidence-based strategies for soil conservation and climate resilience, which can then be adopted into policy guidelines.

CONCLUSION

As a conclusion, this study has highlighted the critical issue of idle land and its implications for food security in Malaysia. By employing a scoping review methodology, we synthesized existing literature to uncover the multifaceted challenges that contribute to the underutilization of agricultural land. The findings revealed significant barriers, including economic constraints, social barriers, and environmental challenges, which collectively hinder the effective use of these lands. Specifically, financial difficulties faced by farmers, societal attitudes towards agriculture, and environmental degradation such as soil degradation and climate change were identified as key factors contributing to land idleness. Additionally, issues related to land tenure, inadequate infrastructure, and socio-economic constraints further complicate the situation, underscoring the complexity of the problem.

The implications of these findings are far-reaching for academic research, policy development, and practical applications. For the academic community, this study provides a comprehensive understanding of the factors preventing the effective use of idle agricultural land, offering a foundation for future research. Scholars can build on this work to explore specific interventions and their impacts on land utilization. For policymakers, the study emphasizes the urgent need for targeted policies and strategic planning to address the identified barriers. By implementing financial support mechanisms, improving infrastructure, and reforming land tenure systems, policymakers can create an enabling environment for the productive use of idle lands.

In practical terms, unlocking the potential of idle lands is crucial for mitigating food insecurity and promoting sustainable agricultural practices. This study highlights the importance of multi-faceted approaches that incorporate economic, social, and environmental considerations. By addressing the root causes of land idleness, Malaysia can enhance its agricultural productivity, ensuring a stable and sustainable food supply for its growing population. The practical implications of this research underscore the need for coordinated efforts between government agencies, researchers, and the farming community to develop and implement effective strategies for land utilization. In conclusion, this study not only contributes to the academic discourse but also provides actionable insights for policymakers and practitioners aimed at transforming idle lands into productive assets for national food security.

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