

GIS-Driven Evaluation of Suitable Paddy Cultivation Zones

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Abstract

Competition for agricultural land use in developed countries is increasing, leading to concerns about changes in land use patterns worldwide. In fact, the world in general has accepted this phenomenon as an inevitable trend because in any situation, area developments will continue to take place. In Malaysia, this issue is particularly relevant in Kedah, where the rice cultivation area has been decreasing over time. The decline in paddy field area could carry significant implications for the land administration system and may result in environmental problems such as drought, floods, and landslides in Alor Setar. To solve this issue, the purpose of this research is to collect data on the suitability of the establishment of new paddy fields near Alor Setar, Kedah. By examining the land use patterns and changes in the paddy area, this research will identify factors contributing to this phenomenon. Furthermore, the utilization of the Geographical Information System (GIS) will facilitate the examination of the prevailing land conditions and land utilization, thereby enabling streamlined data compilation, analysis, and visualization processes. The findings will provide valuable insights for agricultural planners, consultants, farmers, and investors seeking to establish paddy fields in Alor Setar, facilitating informed decision-making regarding land use and investment. Ultimately, this study contributes to sustainable land management practices and the preservation of agricultural and for rice production in the region.

Keywords: *Land use, paddy field, suitability area, GIS analysis*

GIS-DRIVEN EVALUATION OF SUITABLE PADDY CULTIVATION ZONES

ABSTRACT

Competition for agricultural land use in developed countries is increasing, leading to concerns about changes in land use patterns worldwide. In fact, the world in general has accepted this phenomenon as an inevitable trend because in any situation the development of the area will continue and take place. In Malaysia, this issue is particularly relevant in Kedah, where the area of rice cultivation has been decreasing over time. This decline in paddy field area can have significant implications for the land administration system and may result in environmental problems such as drought, floods, and landslides in Alor Setar. To solve this issue, the purpose of this research is to collect data on suitability for the establishment of new paddy fields near Alor Setar, Kedah. By examining the land use patterns and changes in the paddy area, the research will identify the factors contributing to this phenomenon. Furthermore, the utilization of Geographical Information System (GIS) will facilitate the examination of prevailing land conditions and land utilization, thereby enabling streamlined data compilation, analysis, and visualization processes. The study's findings will provide valuable insights for agricultural planners, consultants, farmers, and investors seeking to establish paddy fields in Alor Setar, facilitating informed decision-making regarding land use and investment. Ultimately, this study contributes to sustainable land management practices and the preservation of agricultural land for rice production in the region.



1.0 OBJECTIVE

- 1 To analyze the land use patterns and changes in the area of paddy land in Alor Setar, Kedah.

- 2 To identify the factors that contribute to the change in the land use pattern of paddy fields in Alor Setar, Kedah.

- 3 To propose measures and strategies to address the decline in paddy fields and mitigate potential environmental problems associated with the loss of agricultural land.

2.0 ADVANTAGES

- 1 Improved understanding of land use patterns.

This understanding can help in making informed decisions regarding land management and development.

- 2 Suitability data for new paddy fields area.

This information can help identify suitable areas for expanding rice cultivation and ensure the long-term availability of agricultural land.

- 3 Utilization of Geographical Information Technology.

This technology enables more accurate and efficient data collection, analysis, and visualization, enhancing the overall effectiveness of the study.

3.0 USEFULNESS

- 1 Environmental impact assessment.

To understand the factors contributing to potential environmental problems, such as drought, floods, and landslides, resulting from the loss of paddy fields, in order to propose appropriate measures and strategies for mitigating environmental impact and promoting sustainable land use practices.

- 2 Sustainable land management.

Aids land managers and policymakers in identifying appropriate areas for expanding rice cultivation, fostering sustainable land management practices and ensuring long-term availability of agricultural land for rice production.

- 3 Land administration system improvement.

By using Geographical Information Technology contributes to the improvement of the land administration system by enabling efficient data collection, analysis, and visualization, resulting in enhanced land management and administration processes.

4.0 NOVELTY

- 1 Long-term analysis.

The study analyzes the changes in land use patterns and the area of paddy land over a span of almost three decades, from 1984 to 2012. This long-term analysis provides a comprehensive view of the trends and patterns, allowing for a deeper understanding of the phenomenon and its implications.

- 2 Suitability data for new paddy fields area.

The study produces suitability data for the establishment of new paddy fields in Alor Setar. This data can guide future land use planning and decision-making processes, contributing to sustainable agricultural development and ensuring the availability of agricultural land for rice cultivation.

- 3 Integration of Geographical Information Technology

The study utilizes Geographical Information Technology, including tools and techniques for land use classification and spatial analysis. This integration allows for a more accurate and efficient analysis of the land status and current land use, providing valuable data for decision-making and land management purposes.

5.0 COMMERCIALISATION POTENTIAL

- 1 Agricultural planning and consulting services.

Provide guidance to farmers or investors interested in establishing new paddy fields.

- 2 Environmental consulting and conservation services.

Offer services to assess and mitigate the environmental risks associated with agricultural land loss and contribute to conservation efforts in Alor Setar.

- 3 Geographical Information Technology (GIS) applications.

Provide GIS software, tools, and services to support similar studies or land administration systems in other regions facing similar challenges of agricultural land competition and changing land use patterns.

6.0 INVENTORS



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Cawangan Perak



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Sekian, terima kasih.

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Saya yang menjalankan amanah,

SITI BASRIYAH SHAIK BAHARUDIN
Timbalan Ketua Pustakawan

nar

Setuju.

27.1.2023

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