Journal of Development and Integrated Engineering

Journal homepage:
https://ejournal.upi.edu/index.php/jodie

Planning Of Kiwari Green Open Space Facilities In Peat Land: Case Study Of The Region Of Lambung Mangkurat University

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A B S T R A C T

Planning of facilities and infrastructure of Green Open Space (GOS) on peatlands is an important aspect in developing a sustainable environment, especially in the area of Lambung Mangkurat University. This study aims to analyze the potential and challenges faced in developing GOS on peatlands. The methods used include literature studies and field observations to determine the location of GOS development. The results of the study indicate that the selection of appropriate vegetation, the use of a tropical approach to GOS planning, and the provision of supporting facilities such as pedestrian paths, food courts, prayer rooms, GOS, and open stages are very important to improve the ecological and social functions of GOS. These findings provide recommendations for the development of more effective GOS facilities on peatlands, with the hope of creating a healthier and more sustainable environment, especially for students and the surrounding community.

ARTICLE INFO

Article History:
Submitted/Received 7 Jan 2025
First Revised 20 March 2025
Accepted 15 April 2025
First Available 1 June 2025
Publication 1 June 2025

Keywords:
facilities and infrastructure, GOS,
peatlands,
tropical architecture
Lambung Mangkurat University

1. INTRODUCTION

Infrastructure is the basic physical equipment in an environment, area, city, or region (spatial space) that allows the space to function properly. Meanwhile, according to Jayadinata (1992 in Kiki Armansyah, 2018), infrastructure is an important factor that is very influential in determining the direction and development of a region. The success of development is highly dependent on adequate infrastructure. City infrastructure itself includes public facilities that are the main support for the smooth running of various activities in the city, which ultimately affects the growth and development of the city. Meanwhile, according to Moenir (1992-119), facilities are all types of equipment, work equipment and facilities that function as the main or auxiliary tools in carrying out work, and also in the context of interests related to work organization. From the definition of facilities and infrastructure above, one of the important elements in urban areas is green open space (GOS). This open space has a vital role as a comfortable place to carry out various activities, such as sports, recreation, and social interaction. Open space itself is a grouped area or elongated path in an area that is not limited by buildings. According to Law No. 26 of 2007 concerning Spatial Planning requires the provision and utilization of green open space (GOS), at least 30% of the city area with the aim of creating a productive, safe, comfortable, and sustainable urban environment. But it does not stop with the continuation of the current GOS development not only in the communal area but has entered the area or location in preventing the consequences of environmental changes or damage. Examples such as the development of green space areas on peatlands as an effort to reduce the impact of peatland damage.

Peatlands or peat soils are considered to have no benefits, so they are often neglected, abandoned, and considered obstacles in development. Because they are considered disturbing and unkempt, many people convert peatlands into land for construction facilities, road facilities, plantations or agriculture and many more (Badan Penelitian dan Pengembangan Pertanian, 2014). Whereas peatlands have functions for the balance of nature, one of which is as a greening tour and habitat for flora and fauna (Badan Penelitian dan Pengembangan Pertanian, 2014)

Peatlands are completely dependent on precipitation nutrient intake from rainwater nutrients rather than from mineral soils or seepage from groundwater. As a result, peat soils become acidic and lack nutrients. Peatlands are usually formed from the accumulation of woody materials around 4,000-5,000 years ago and produce peat soils (Anderson in Agricultural Research and Development Agency, 2014). In addition, peat soil is not conventional soil but is the result of the decay of plants over thousands of years until it becomes peatland. Its thickness ranges from a few centimeters to five to 15 meters. In 10 years, peat soil will still decline up to 1 m. Therefore, development efforts on peat soil need to be carefully planned so that the load is spread evenly over the surface of the peat soil, thus slowing down the decline and (Badan Penelitian dan Pengembangan Pertanian, 2014).

The largest peatlands are located in South Kalimantan with a total of approximately 1,194,471.98 hectares, or 32.39% of the total land area in Kalimantan (Global Wetlands Version 3). Peatland habitats in South Kalimantan are generally in the form of peatlands and peat swamps on the coast of the region, especially South Kalimantan in the NoGOS Banjarmasin region with its concern for peatlands that are damaged and reduced every year by human activities (Badan Penelitian dan Pengembangan Pertanian, 2014).

Facts in the field show that the use of peatland for construction has resulted in the peatland no longer being in its natural condition or has been damaged over the years by human activities due to a lack of appreciation for peatlands (Badan Penelitian dan

DOI: https://doi.org/10.17509/jodie.v5i1.79409
p- ISSN 2620-9934 e- ISSN 2621-1610

Pengembangan Pertanian, 2014). In fact, the impact of construction due to misuse of development that is not in accordance with peatland regulation standards is a serious problem in South Kalimantan (Kanal Pengetahuan Fakultas Biologi, 2018).

The problems presented in the background above offer responses and improvements to problems or issues with the utilization or processing of Green Park Space facilities in peatland areas or peatlands to reduce the impact of peatland damage. Planning Green Open Space (GOS) facilities and infrastructure in peatlands, especially in the Lambung Mangkurat University area, is very important considering the environmental conditions with challenges faced in peatland management. Lambung Mangkurat University as a higher education institution has a strategic role in developing green spaces that can function as educational and recreational spaces for students and the surrounding community. Therefore, this research aims to formulate a planning model for GOS facilities and infrastructure that is in accordance with the characteristics of peatlands and the needs of students and communities around Lambung Mangkurat University. With the right approach, it is hoped that GOS can make a positive contribution to the balance of the ecosystem and improve the quality of life of the people in the area.

2. METHODOLOGY

The research method in this discussion uses a descriptive method, namely the author provides answers to facts in the results of research or data collection, using the following data collection techniques:

a. Field Observation: The site location is in the Lambung Mangkurat University campus area, Banjarmasin, South Kalimantan. The author makes observations to collect data about the existing conditions of the site, site boundaries, and environmental conditions around the site.
b. Literature Study: Literature studies include GOS design standards data related to the tropical architecture approach through journal literature searches, location biography data, and design objects carried out.

3. RESULTS AND DISCUSSIONS

Result: present the results of your work. Use graphs and tables if appropriate, but also summarize your main findings in the text. Do NOT discuss the results or speculate as to why something happened; that goes in the Discussion

a. Location and Site

The development of GOS Kiwari Tourism is located on the site of the Lambung Mangkurat University campus area, NoGOS Banjarmasin, South Kalimantan (3°17'45.26 "S, 114°35'2.12 "E) with a site area of 15,072 m^2.

DOI: https://doi.org/10.17509/jodie.v5i1.79409
p- ISSN 2620-9934 e- ISSN 2621-1610

Figure 1: Lambung Mangkurat University
Source: pmb.ulm.ac.id, 2022

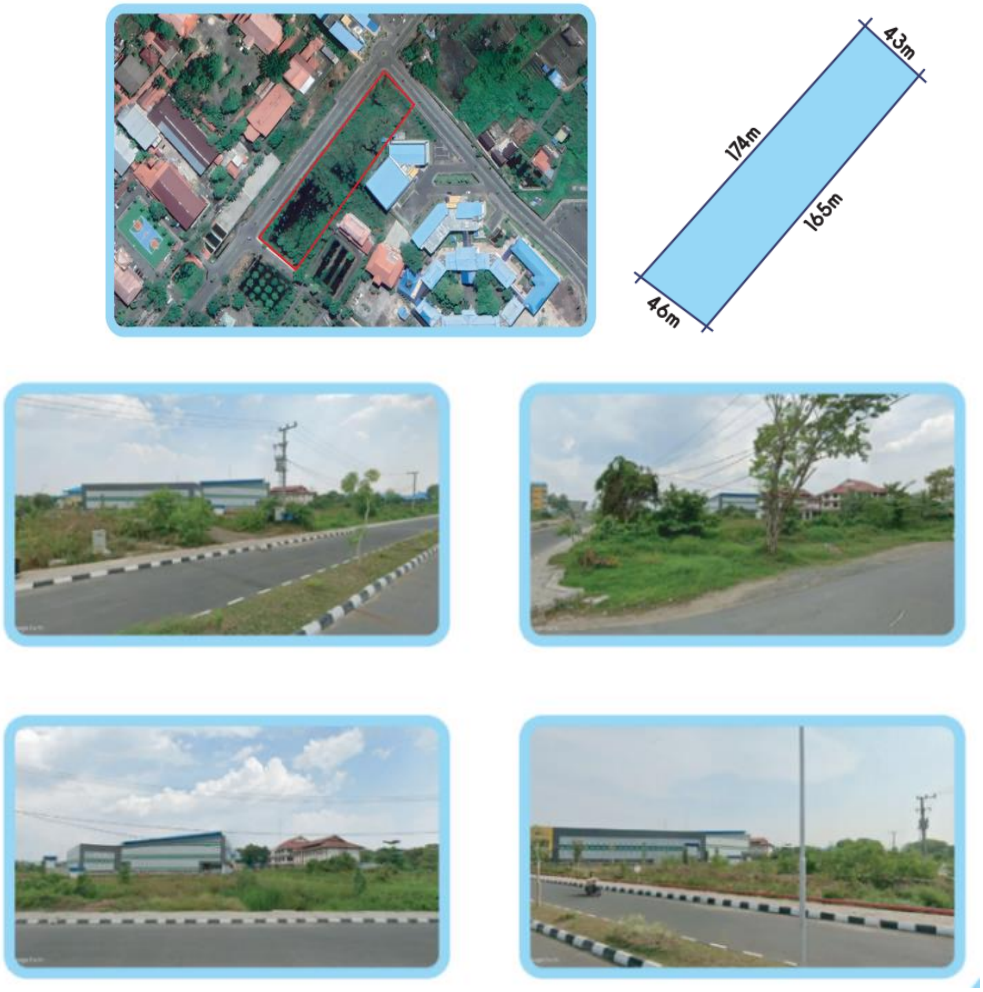

Figure 2: Site Location Map and Boundaries
Source: Personal Documentation 2023

DOI: https://doi.org/10.17509/jodie.v5i1.79409
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b. Activity Analysis

Activity	Space	User	Activity Properties
Staff	Provide maximum service to visitors starting from cleaning the green space, as well as providing services in the food court area and parking area.	All area	Public
	Prayer	Area Musholla	Semi Public
	Ablution	Area Wudhu	Semi Public
	Bak/Bab	Toilet	Privat
Visitore	Refresing/Healing/Gaming	All area	Public
	Watching the show	Area show	Public
	Eating in the *food court*	Area *food court*	Public
	Prayer	Area Prayer	Semi Public
	Ablution	Area Ablution	Semi Public
	Bak/Bab	Toilet	Privat

c. Space Requirement Analysis

Kelompok Kegiatan	**Kebutuhan Ruang**	**Kapasitas**	**Jumlah Ruang**	**Standar (m^2)**	**Flow**	**Sumber**	**Besaran**
Outdoor	Gazebo	4	1	3,5	50%	AU	21
	Watching Outdoor perfomance	20	1	1,5	20%	AD	36
	Motorcycle Parking	50	1	2,5	20%	AD	150
	Car Parking	8	1	11,5	20%	AD	110,4
Indoor	Food court	90	1	4	20%	AP	360,2
	Prayer	40	1	1,5	20%	AP	54
	Bathroom and Ablution Place	6	2	1,7	20%	AD	24,48
	Luas Total						753 m^2

Site Area: 15.072 m^2
KDB : KDB maksimal 50%
: 15.072 x 5%
: 753 m^2

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KDH : Minimal 30%
: 15.072 - 753
: 14.319 m^2

d. Analysis and Concept of Space Zonification

Building zoning based on the site analysis that has been carried out is divided into 2 zones, namely the green park space zone and building facilities (prayer room and food court).

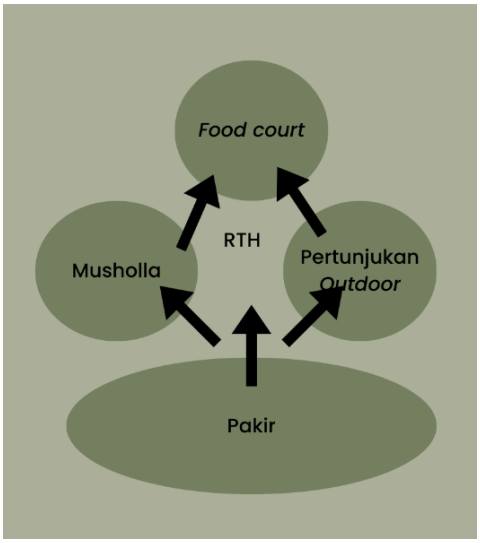

Figure 2: Zoning Map of Space Arrangement
Source: Personal Documentation, 2023

e. Analysis of Tropical Architecture Elements and Parameters in Kiwari Greenway Tourism

In general, tropical architecture can only be applied in hot and rainy climates. Indonesia has two climates as a factor in the emergence of Tropical Architecture approaches that are often applied to buildings or areas (Karyono Tri Harso, 1998). The traditional or local tropical architecture of GOS Kiwari Tourism emphasizes the use of environmentally friendly natural materials, natural air ventilation with good circulation, the use of greenwalls in building facilities, conservation of native vegetation from the Kalimantan region, and integration of open spaces. Meanwhile, buildings with low roofs, large windows, and gardens are characteristic of traditional tropical architecture. The application of the tropical architecture concept is in the form of areas and buildings that can accommodate activities that benefit the local community, especially ULM student visitors. The following are the design elements that will be planned in the Kiwari GOS Tourism below:

TROPICAL ARCHITECTURE → LOCALITY →
- LOCALITY MATERIAL
- CULTURE
- ECO VILLAGE AND FRIENDLY

f. Analysis and Concept of Tropical Architecture Emphasis or Design

- Analysis and Concept of Tropical Architecture in GOS Area

The concept of tropical architecture in the GOS area aims to create a better and healthier peatland habitat for flora and fauna and reduce adverse impacts on the natural and human environment. This is done by using houses on stilts so that buildings do not damage the swamps as a habitat for aquatic flora and fauna, making green spaces, using Eco-materials, conserving native vegetation around the tourist area to support

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p- ISSN 2620-9934 e- ISSN 2621-1610

biodiversity and maintain the stability of the peatland ecosystem, and providing special pedestrian roads.

Figure 3: Space Area
Source: Personal Documentation, 2023

- Analysis and Concept of Tropical Architecture in Buildings

GOS Kiwari Tourism raises the concept of tropical architecture. This concept is applied to the use of materials close to nature or local so that the use of these materials can be in harmony with the tropical concept that follows the Indonesian climate, especially Kalimantan which is famous for its peat forests, aiming to reduce carbon footprint and environmental impact. The building uses teak wood and bamboo to overcome noise and ventilation problems with the concept of Eco-materials.

In the musholla and food court buildings, natural materials are used, such as wood as a building facade and wood as a building floor and as the main foundation of the stilt house. On the side of the main building there is also a greenwall applied green wall technology to help regulate building temperature, improve air quality, and absorb rainwater, all of which can support the peatland ecosystem. All material elements found in the food court and musholla buildings are psychological functions and building comfort as an impression of the emergence of Tropical Architecture in Kiwari GOS Tourism. The building design uses natural ventilation with large windows designed to increase air circulation and reduce the need for artificial air conditioning, thus saving energy. Large

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p- ISSN 2620-9934 e- ISSN 2621-1610

doors and windows as well as a roof designed to increase airflow will help keep the building cool without the need to use too much air conditioning.

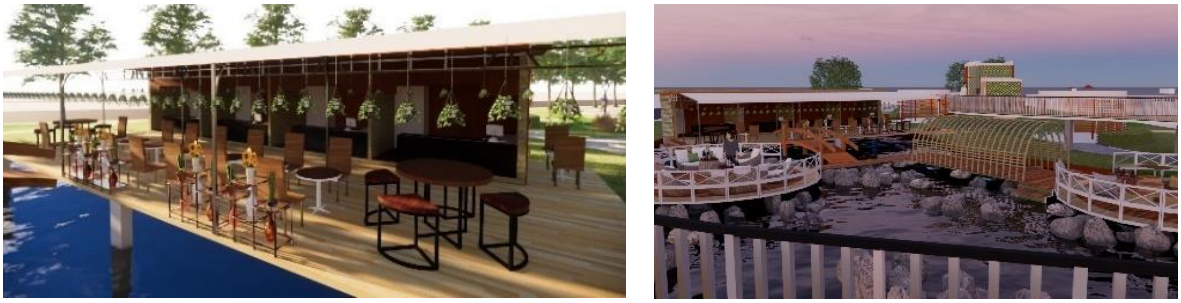

Figure 4: Food Court
Source: Personal Documentation, 2023

Figure 5: Musholla
Source: Personal Documentation, 2023

g. Analysis and Concept of Landscape

Type	Function and Characteristics	Figure
Banyan Tree	Function: - Shade - Easy to maintain Characteristics: - Banyan has oval-shaped leaves, with single leaves arranged facing each other. The leaves are oval, with pointed tips and blunt bases, between 3-6 cm long and 2-4 cm wide.	 Source: https://images.app.goo.gl/rJDJEDvenoTfporQ7
Green Triangle Palms	Function: - As a plant ornamental - Increases air humidity Characteristics: - Triangular stem cross-section - Green stem color - Base of leaves that are - crushed	 Source: https://images.app.goo.gl/WQteAuzy9xkkURPKA

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p- ISSN 2620-9934 e- ISSN 2621-1610

Type	Function and Characteristics	Figure
Pohom Ketapang Kencana native to Kalimantan	Function: - As an ornamental plant - As a shade tree Characteristics: - The canopy grows in stages so that it resembles a pagoda and its branches are horizontal. - Its small leaves grow lush and clustered like an umbrella shape, so it can protect the plants underneath.	 Source: https://images.app.goo.gl/pDGk1suU3me74n5u5
Pohon Jambu native to Kalimantan	Function: - As a fruit crop planted in the fruit tourism park area. Characteristics: The stem is woody, hard, smooth bark, peeling, greenish brown in color.	 Source: https://images.app.goo.gl/h8qcX9zgUqqWCMzP9

4. CONCLUSIONS

The conclusion of this research is that the planning of Kiwari Green Open Space (GOS) facilities and infrastructure on peatlands, with a case study in the Lambung Mangkurat University area, shows the importance of an environmentally and sustainability-based approach. Green spaces on peatlands must be designed with attention to the unique characteristics of peatlands, including their susceptibility to degradation. This research emphasizes that proper management, selection of appropriate vegetation, and construction of environmentally friendly facilities can support the ecological, social, and aesthetic functions of green spaces. With good planning, GOS not only contributes to the improvement of environmental quality, but also becomes a public facility that supports academic and social activities around Lambung Mangkurat University.

ACKNOWLEDGMENTS

I would like to express my sincere gratitude to all those who have supported me in writing this article. First of all, I would like to thank the readers who have taken the time to read this piece. Your feedback and support means a lot to me. I would also like to thank my co-authors and especially Professor Juang Akbardin for providing guidance, inspiration and constructive criticism throughout the writing process. Without Prof. Juang's advice and input, this article would not have achieved the expected quality. Finally, I appreciate all the reference sources that have provided valuable and in-depth information to support the arguments presented in this article. Hopefully, this article can provide benefits and insights for readers.

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DOI: https://doi.org/10.17509/jodie.v5i1.79409
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