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PROCEEDING FOR INTERNATIONAL COLLOQUIUM ON NEXTGEN CONSTRUCTION

2025

*Future-Ready Construction and Facility Management:
Driving Research and Innovation for a Smart Built Environment*

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SUSTAINABLE DESIGN PRINCIPLES OF A PUBLIC INSTITUTION: A CASE STUDY OF THE PERBADANAN PERPUSTAKAAN AWAM, KELANTAN

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Abstract

This research explores the critical role of sustainable design principles in shaping resilient and equitable urban environments. By integrating ecological, social, and economic considerations, sustainable urban development aims to create cities that meet the needs of the present without compromising the ability of future generations to meet their own needs. The paper examines a range of sustainable design principles, including green building which holds a huge importance in society. The chosen study is not a certified green building in Malaysia, Green Building Index (GBI) and also did not award any certification. The certification takes into account a green building's features and green design elements, before granting a rating score. In this case study, the Perbadanan Perpustakaan Awam, Kelantan is chosen to discuss the issues that arise from it. The main research problem that I am trying to tackle in the case study of Perbadanan Perpustakaan Awam Kelantan is to evaluate the effectiveness of sustainable design. The aim is to investigate how the implementation of these principles has contributed to environmental sustainability, social sustainability, and economic sustainability. The research design and methods are through the research of the case study of the chosen building. The findings of the study demonstrate that sustainable design principles can be effectively implemented in urban development.

Keywords: green building, green building index, environmental, social and economic sustainability

1. INTRODUCTION

The Perbadanan Perpustakaan Awam Kelantan (PPAK) was originally referred to as Carnegie Public Library and was set up in 1938. Besides other things, the Perbadanan Perpustakaan Awam Kelantan (PPAK) was set up with the purpose of managing, conserving, and promoting books and other related materials usage in the community. The Perbadanan Perpustakaan Awam Kelantan (PPAK) has a Headquarters, Branch Libraries, Community Libraries, and Rural Libraries. The three (3) main activities of the Perbadanan Perpustakaan Awam Kelantan are information service activities, library development activities, and management activities. In order to achieve the goals and objectives of the Kelantan Public Library Corporation, there is a sub-activity or component to each of these activities.

The research background for the study is increasing recognition of the necessity of sustainable development for urban settlements in earnest response to pressing environmental, social, and economic challenges. The swift urbanization in cities means the fastened consumption of resources, the increase of pollution, and the widening of the socio-economic gap. Sustainable design principles offer an excellent avenue to pave the way toward more resilient, equitable, and environmentally friendly cities.

In fact, theoretical concepts and the advantages of sustainable building design have been studied; however, little empirical research has been done that examines the practical implementation of these principles in the field of urban development projects. The case study aims to add to this area of knowledge by providing insight on the Perbadanan Perpustakaan

Awam Kelantan by analyzing the implementation of sustainable design principles in the building.

2. LITERATURE REVIEW

The review hence covers in-depth research on various topics of sustainable building design, including important ideas and concepts such as indoor environmental quality, energy efficiency, water conservation, and the incorporation of green spaces. It will investigate various green building rating systems and how well they apply to library buildings, looking at their evaluation procedures, requirements, and possible advantages.

The Green Building Index is Malaysia's first comprehensive rating system for evaluating the environmental design and performance of Malaysian buildings based on the six (6) main criteria of:

- a) Energy Efficiency
- b) Indoor Environment Quality
- c) Sustainable Site Planning & Management
- d) Materials & Resources
- e) Water Efficiency
- f) Innovation

ASSESSMENT CRITERIA OVERALL POINTS SCORE			
PART	ITEM	MAXIMUM POINTS	SCORE
1	Energy Efficiency	35	
2	Indoor Environmental Quality	21	
3	Sustainable Site Planning & Management	16	
4	Material & Resources	11	
5	Water Efficiency	10	
6	Innovation	7	
TOTAL SCORE		100	

Table 2.3.1 Assesment criteria: Overall points score

A key focus will be on indoor air quality (IAQ), investigating factors such as enough ventilation to ensure fresh air supply and the pollution control like volatile organic compounds (VOCs) from building materials, dust, and mold. It also examines strategies for maintaining optimal temperature and humidity levels to ensure thermal comfort for library users.

Based on this literature study on this sustainable design building on these public institutions, it needs to refer to the authority to have a different important rule for each province in Malaysia, such as Kota Bharu Urban Structure Planning Plan that became the guideline for the structure in Kelantan.

All this improvement can lead to a lot of challenges such as lack of early awareness of the importance of sustainable building. To create a building that can get a GBI award as it holds

the crucial point in the building that can achieve the award. It can also refer to the UBBL for the standard requirements that need to apply.

So, all of this can be fulfilled by following the needed requirements by the planning plan and also by the standard Malaysia guidelines to provide a comfortable experience in the building itself.

3. METHODOLOGY

The methodology section provides a description of the research design and data collection techniques adopted in the study. This study utilized a qualitative research approach, namely a case study design, whereby sustainable design principles were investigated with regard to Perbadanan Perpustakaan Awam Kelantan (PPAK). The techniques used/combinations of techniques were in data collection. Document analysis and filed observations were among those techniques used. The document analysis entailed a review of relevant planning documents, environmental impact assessments, and sustainability reports.

Depending on the particular research questions, the type of data that has been collected, and the objectives of the study, the methods for data analysis to be used will differ. Whichever methods are used, such combination in action will lead to sufficient analysis and meaningful conclusions pertaining to the hurdles and prospects of sustainable design principles integration into PPAK. The choice of a method for data analysis should be contingent on the specific research questions being asked, the type of data collected, and the objectives of the study if they are to obtain meaningful results in terms of the challenges and opportunities of integrating sustainable design principles within PPAK.

The chosen data analytical methods are those that offer the greatest chance of yielding suitable conclusions for the research questions posed to the local populace to give the most accurate outcome possible.

4. FINDING AND DISCUSSION

This section should present the research findings in a clear and structured manner. Use tables, figures, and charts to illustrate key results, ensuring they are appropriately labeled and captioned. Each finding should be discussed with reference to the literature reviewed earlier. Interpretations and implications of the results should be provided, with a focus on how they contribute to the field. Where applicable, mathematical formulas or models should be included and properly formatted.

5. CONCLUSION

The findings of this study are expected to provide valuable insights into the current state of library services in Kelantan. This includes identifying areas of strength and weakness, understanding user needs and expectations, and assessing the effectiveness of existing library programs.

These insights can then be used to inform the development of more effective and user-centered library services that better meet the evolving needs of the community. This research of data analysis is from the study of the existing building and the survey of the local residents of Kelantan that at least live in Kelantan for 10 years to provide more specific results.

Finally, this research emphasizes the need for ongoing research and innovation in sustainable design to make sure the challenges can be solved. Continued exploration of new technologies,

materials, and design strategies is crucial to address the evolving challenges of urbanization and climate change. The study shows that the sustainable design principle has become one of the important parts of development to improve the lifestyle and provide comfort to users.

6. ACKNOWLEDGMENT

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