

**GREEN ARCHITECTURE FOR TRANSFORMING MALACCA TOURISM
BUILDING: A CASE STUDY AT MINI MALAYSIA AND ASEAN
CULTURAL PARK**

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DECLARATION

“I admit that this report is the result of my own, except certain explanations and passages where every of it is cited with sources clearly”

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DEDICATION

I would like to dedicate the appreciation to my family members especially my parent Mr. Yapp Shu Keong and Mdm. Lo Mu Yin who unconditionally supported me spiritually and financially, beloved siblings, respective supervisor and panel who guided me through the journey of research, course mates and team mates who assisted me throughout the conduct of this research. Most importantly, may all the glory be to God.

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ABSTRACT

This research discusses about green architecture for transforming Malacca tourism building in Mini Malaysia and ASEAN Cultural Park, Malacca. In order to study on green architecture for transforming Malacca tourism building into green building, this research targets on two major issues, which consist of: 1) The criteria of green architecture for a tourism building, and 2) The strategies involved in transforming tourism building (Mini Malaysia and Mini ASEAN Cultural Park) in Malacca into a green building. The researcher conducted the research of this case study in qualitative method, in which semi-structured interview are conducted with the respondents from Mini Malaysia and ASEAN Cultural Park, and the Ministry of Tourism and Cultural Malaysia, Malacca office. Based on the case study, the criteria of green architecture for a tourism building include energy efficiency and conservation, water efficiency and conservation, working with climate, materials and resources, sustainable site planning and management, indoor environmental quality and respect for users, holism, integrated design, waste management, building operation and management, liveable communities, and innovation. Meanwhile, the strategies involved in transforming tourism building into green building consist of sustainable design principle application, benchmarking, day lighting and shading study, thermal scanning, retro-commissioning, retrofitting, measurement and monitoring, plumbing fixtures, policies and procedures, and change management application. Also, the innovative solutions in encouraging the transformation of green architecture into tourism building in Malacca are proposed in the case study.

Keywords: Green Architecture, Sustainable Practices, Tourism Building

ABSTRAK

Kajian ini membincangkan tentang seni bina hijau bagi transformasi bangunan pelancongan Taman Mini Malaysia dan ASEAN di Melaka. Bagi mengkaji isu tentang seni bina hijau untuk transformasi bangunan pelancongan di Melaka, penyelidik menumpukan kepada dua isu penting, iaitu: 1) Kriteria seni bina hijau untuk bangunan pelancongan, dan 2) Strategi yang terlibat dalam transformasi bangunan pelancongan (Taman Mini Malaysia dan ASEAN) di Melaka kepada bangunan hijau. Penyelidik telah menjalankan kajian kes ini menggunakan kaedah kualitatif, di mana temu ramah separa berstruktur telah diadakan bersama sasaran responden dari Taman Mini Malaysia dan ASEAN dan juga Kementerian Pelancongan dan Kebudayaan Malaysia, berpusat pejabatnya di Melaka. Berdasarkan kajian kes ini, kriteria seni bina hijau untuk bangunan pelancongan termasuklah kecekapan dan pemuliharaan tenaga, kecekapan dan pemuliharaan air, bekerja dengan iklim, bahan-bahan dan sumber, perancangan dan pengurusan tapak lestari, kualiti persekitaran dalaman dan menghormati pengguna, holisme, reka bentuk bersepadu, pengurusan sisa, operasi dan pengurusan bangunan, masyarakat yang sesuai didiami, dan inovasi. Tambahan pula, strategi-strategi yang terlibat dalam transformasi bangunan pelancongan kepada bangunan hijau mengandungi aplikasi prinsip-prinsip reka bentuk lestari, penanda aras, kajian lampu dan teduhan, imbasan haba, pertauliahahan retro, retrofitting, pengukuran dan pemantauan, lekapan paip, dasar dan prosedur, dan aplikasi pengurusan perubahan. Selain itu, penyelesaian inovatif dalam menggalakkan transformasi seni bina hijau untuk bangunan pelancongan di Melaka turut dicadangkan dalam kajian kes ini.

Kata Kunci: Seni Bina Hijau, Amalan Kelestarian, Bangunan Pelancongan

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CHAPTER 1

INTRODUCTION

1.1 Background

According to Oxford Dictionary (2015), the term of “green” means environmentally friendly or to make less harmful to the environment, while architecture is the art or practice of designing and constructing buildings. When both terms are placed together, green architecture simply means designing and constructing buildings in an environmentally friendly way. Kuiper (2010) states that green architecture is a philosophy of architecture that promotes sustainable energy sources, the conservation of energy, the reuse and safety of building materials, and the siting of a building with consideration of its effect to the environment. Also, Murray-White (2012) emphasizes that green architecture is a sustainable method of green building design in which the green architects usually work with the key concepts of creating energy efficient, environmental friendly buildings, where the buildings are designed and constructed with the environment in mind. In other word, green architecture is a sustainable architecture practice that aims to minimize the negative environmental impact contributed by buildings through the efficiency and moderation of its material usage, energy consumption, and development space.

Green architecture is important specifically in this century when global climate change has become a viral environmental issue. According to the United Nation Environmental Programmes (UNEP) (2009), both in developed and

developing countries, buildings contribute more than 40% of total energy consumption, which is equals to one third of global greenhouse gas emissions. These carbon footprints are mainly caused by the consumption of fossil fuel generated energy. In order to minimize carbon footprint emission, green architecture plays an important role in reducing building energy consumption. Montoya (2011) emphasizes that building orientation has one of the greatest impact on the energy efficiency of the building and these choice of building orientation is generally decided by the architects during a project's schematic design phase.

Additionally, the concept of green architecture is important particularly in public buildings including public tourism building. It lowers down the building operating costs through the address of energy consumption reduction. Green Building Council, Inc. in the U.S. (2011) points out governments that reduce the environmental impact of construction, operations and maintenance of publicly funded facilities save tax-payers' money each year because green buildings operate more efficiently, consuming less energy, water and fossil fuels. Moreover, Green Building Council, Inc. in the U.S. (2011) also states the benefits of build green in the public sector which consist of promote local market transformation, reduce operations and maintenance costs over the life of a building, extend infrastructure capacity, and reduce staff-related overhead and relocation costs.

1.2 Problem Statement

In order to reduce the carbon footprints contributed by buildings, green architecture has started to be adopted in many countries including Malaysia. In 2009, Malaysia has its first green-rated building with Malaysia Energy Centre certified as the first Green Building Index (GBI) Certified Building. Soon, the concept of green architecture and green building are adopted in public and private commercial buildings in Malaysia. These certified green buildings are listed in the official website of Green Building Index Organisation.

However, the construction of green buildings based on green architecture does not happen in the tourism buildings in Malaysia. The gap arises here while green architecture are started to be widely implemented onto tourism buildings such as museums and exhibition centres in other developed countries, but Malaysia is still lagging behind to adopt green architecture on its tourism buildings.

Malacca is a historical state which is famous with its heritage sites as tourism attractions. In order to close the gap on the implementation of green between developed countries and Malaysia, it is good to start from the tourism attractions in Malacca with the purpose to adopt green architecture in Malaysia tourism buildings. Therefore, it is critical for the researcher to study on how we are going to adopt green architecture or transform the tourism building into green building here in Malacca.

1.3 Research Questions

Based on the problem being detected, three research questions stand on the criteria, strategies, and innovative solutions on the adoption of green architecture in Malacca tourism building are stated. This research focuses on green architecture for transforming Mini Malaysia and ASEAN Cultural Park, therefore, the research questions are:

- i. What are the criteria of green architecture for a tourism building?
- ii. What are the strategies involved in transforming tourism building (Mini Malaysia and ASEAN Cultural Park) in Malacca into a green building?
- iii. What are the innovative solutions to encourage the transformation of green architecture into tourism building in Malacca?

1.4 Research Objectives

Through the research questions formulated by the problem arose in the adoption of green architecture in Malacca tourism building, the researcher has formulated three research objectives, and there are:

- i. To identify the criteria of green architecture for a tourism building.
- ii. To investigate the strategies involved in transforming tourism building (Mini Malaysia and ASEAN Cultural Park) in Malacca into a green building.
- iii. To suggest innovative solutions in encouraging the transformation of green architecture into tourism building in Malacca.

1.5 Scope, Limitation, and Key Assumption of Study

The scope of this research focuses on green and sustainable practices. Firstly, the researcher is going to identify on the criteria of green architecture for public tourism building. Next, one of the research scopes is to focus on investigating the strategies involved in transforming tourism building in Melaka into a green building. Lastly, the research scope also focuses on providing innovative solutions in encouraging the transformation of green architecture into tourism building. The case study of the research is conducted in Mini Malaysia and ASEAN Cultural Park

There are two limitations being identified in this research. Firstly, the case study conducted in Mini Malaysia and ASEAN cultural park can be generalized into public tourism building only. Secondly, the researcher assumed that the respondents have the knowledge on green architecture and given honest answers during the interview sessions for this case study.

The case study of the research is conducted in Mini Malaysia and ASEAN Cultural Park in order to gain adequate and comprehensive information. It is assumed that Mini Malaysia and ASEAN Cultural Park has the potential to implement green architecture onto the building and be transferred into a green building.

1.6 Research Significance

The research on green architecture for transforming Malacca tourism building is significance to different categories of people specifically to the three categories as stated below:

i. The Organisation

This research is significance in the way that the research outcomes contribute to Mini Malaysia and ASEAN Cultural Park with the strategies involved in transforming the existing tourism building into a green building. The strategies provided by this research are able to contribute in reducing the energy consumption as well as enhancing the energy utilisation in the tourism building.

ii. The Tourism Sector

Furthermore, this research is also beneficial to the public tourism sector in Malacca. Ringbeck (2010) points out that environmentally savvy tourists are more prefer to visit green tourist destinations, which are those that put effort to address critical issues such as carbon emissions, biodiversity conservation, waste management, and water supply. This study will provide a significant insight in promoting the transformation of existing public tourism buildings to be innovated into green building.

iii. Malacca State

U.S. Green Building Council, Inc. (2011) points out lead by example as one of the benefits of build green in the public sector. The outcomes of this research might be able to promote local market transformation of green building for the other building with similar characteristics. In order to support Malaysia's vision 2020 to be a high income low carbon developed nation with a minimum GDP per capita of USD 150,000 by the year of 2020, Malacca is leveraging on three strategic objectives, while one of the strategic objectives is to achieving status as a green city. This research will contribute in assisting Malacca to be a step closer in achieving the status of Green City in 2020.

1.7 Summary

To summarize, in order to close the gap identified in Malacca for its transformation into a green city, this research is aimed to provide more information by studying about the criteria of green architecture for tourism buildings. Moreover, the strategies involving in transforming tourism buildings into green buildings are investigated in order to promote local public building transformation on green architecture. At the end of the research, innovative solutions are suggested in order to encourage the transformation of green architecture into Malacca tourism buildings.

This research scope falls on green and sustainable practices. The research is conducted under few limitations in which the research outcome is suitable to be generalized onto similar industry only, while the respondents are assumed to be honest during the process of data collection.

In order to collect adequate information about the transformation of tourism building on green architecture, a public tourism building in Malacca, Mini Malaysia and ASEAN Cultural Park is chosen to be the spot to conduct the case study for this research. This research is significant to three different categories of people particularly to the organisation of Mini Malaysia and ASEAN Cultural Park, the tourism sector in Malacca, as well as to the local transformation of Malacca state into a green city.