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A COMPARATIVE STUDY ON GREEN BUILDING ASSESSMENT (GBA) TOOL IN MALAYSIA

Muhamad Isma Fahmi Bin Mohd Ismail[1], Raja Rafidah Binti Raja Muhammad Rooshdi[2]
Center of Studies for Quantity Surveying, Faculty of Architecture, Planning and Surveying,
Universit Teknologi Mara, 40450, Selangor
Email: ismafahmismail@gmail.com[1] , raja_rafidah@yahoo.com [2]

Abstract:
Green Building or also known as sustainable building has become a trend nowadays due to massive construction happening that causes an impact towards the natural, built, social and economic environments. Malaysia also has developed its own green building assessment or rating tools to comprehend these green policies such as Green Building Index (GBI), Ph JKR, GREEN PASS and the latest one which is MyCREST. However, the differences in nature and assessment characteristics have caused complications for stakeholders in comparing the green building performance of each building by utilizing different assessment tools. Therefore, the main objectives of this study are to identify what are the green assessments available in Malaysia as well to determine what is the most important criteria for each of the tools, thus highlighting the main criteria taken into account when assessing a building. Each criterion from each tool will be compared and ranked according to their level of importance based on the survey obtained by the construction professional. The result shows that energy efficiency is the most important criterion with 94% agreement from the respondents in every assessment tools in Malaysia, followed by water efficiency, indoor environment quality respectively and sustainable site and management with 89% of each criterion.

Keywords: Green Building; Green Building Assessment Tools; Construction Industry

1.0 INTRODUCTION

Building construction and land development have given a vital impact on the natural, built, social and economic environment (Retzlaff, 2008). This is because positive growth of the urban development in construction industry has been identified as the main cause in the depreciation of environment and being the major contribution to pollution (Ding,2008). Since green building is an innovative way of creating energy efficiency, it also reduces the building and its operation that gives impacts to human health as well as the environment, from the earlier stage of planning to it building life cycles (Bahaudin, 2014). Thus, the aim of this study is to identify the green building assessment in Malaysia and also to investigate what are the main criteria for each green building assessment. At the end of the study, the most important criteria for green building assessment will also be discussed.

2.0 LITERATURE REVIEW

2.1 Green Building Index (GBI)

The Green Building Index (GBI) in Malaysia's Industry is recognized as a green rating tool for buildings to promote sustainability in the built environment and raise awareness among developers, architects, planners, designers, contractors and the public about environmental issues to the future generations (Green Building Index, 2011). In the GBI rating, the criteria are more focused on the energy efficiency and indoor environmental quality as they have the greatest impact in the areas of energy use and well-being residents and users of the building. GBI looks into six main criteria such as Energy Efficiency, Indoor Environmental Quality, Sustainable Planning and Management, Material and Resources Water Efficiency and Innovation. A move to promote a green building concept which began in 2009, has

achieved success with more than 300 certified projects in the country, fulfilling the criteria rated by Green Building Index(GBI).

2.2 Ph JKR

Green certification or *"Penarafan Hijau"* (Ph JKR) is a green building rating tool developed based on the performance building towards sustainability with the consideration of the latest requirement by the government (Hamid et al. 2014). JKR (Jabatan Kerja Raya Malaysia) or Public Work Department started to practice green initiative in projects implemented since the 8th Malaysian Plan (PH JKR 2013). In realizing how profound the impact of the government projects is on the whole construction, coupled with the commitments shown by the government in embarking on the green building practice, they have developed this specific tool in order to measure the sustainability level of the government projects administrated by JKR. PH JKR focuses on the design stage and the assessment is based on the list set of criteria. It covers four types of building, including non-residential new building, non-residential existing, non-residential without air conditioner, and the health service building.

2.3 Green Pass

Green Performance Assessment System (Green PASS) in construction is developed and managed by the Construction Development Board of Malaysia (CIDB). This is one of the tools besides PH JKR that has been introduced specifically to maintain the sustainability level of the building performance for the government projects administrated by JKR and CIDB respectively (Hamid et al. 2014). Green PASS primarily focuses on the reduction of 100% carbon emission from construction phase to operation throughout the building's lifecycle for 50 years. The formulation of this national green rating system is also aimed to be implemented by the government projects throughout the whole construction cycle and also function as the building sustainability elevator.

2.4 Malaysian Carbon Reduction and Environmental Sustainability Tool (MyCREST)

Malaysian Carbon Reduction and Environmental Sustainability Tool or MyCREST is developed through joint effort by KKR, JKR and CIDB as main partners under the authority of the Honourable Ministry of Works, together with other related stakeholders. MyCrest is also a tool other than GBI that guides the construction industry players and stakeholders to design, construct and operate buildings that integrate low carbon and sustainable practices (Abd Rahman, 2017). This Green Building Rating Tool is designed as a sustainable building rating system or tool that aims to quantify, hence reduce built environmental impacts in terms of carbon emissions and environmental implications while taking into account a more holistic building life-cycle view starting from pre-design up to demolition stage. The criteria that are involved consist of three certification phases: design, construction, and operation and maintenance. Depending on each phase, the criteria are adjusted for different requirements and relevance according to that particular phase.

3.0 METHODOLOGY

The survey questionnaires were distributed to several respondents to be completed manually. 30 respondents comprises as construction professionals answered the questionnaire relating to the assessment of the green building. The questionnaires were handly distributed and the informal interviews were also held during the survey. The respondents were among the quantity surveyors from the private and public sectors in Klang Valley. The survey was made to investigate which criteria are important in each assessment by ignoring all the scores and rating given in the framework.

4.0 ANALYSIS AND FINDINGS

The results of this study can be summarised in Figure 2 that shows each criterion that has been assessed according to the theme element based on the mean of every criteria involved in each tool of green building assessment involve in Malaysia. The results were made by taken into account the mean of level

of importance of each criterion in the assessment involved and compared it with other criteria in the other building assessment. The finding shows that energy efficiency is the most important criteria with 94% agreement from the respondents in every assessment tool in Malaysia and followed by water efficiency, indoor environment quality respectively and sustainable site and management with 89% of each criterion. The lowest percentages with 84% is sustainable and carbon initiative due to lack of initiative from the government in this issue.

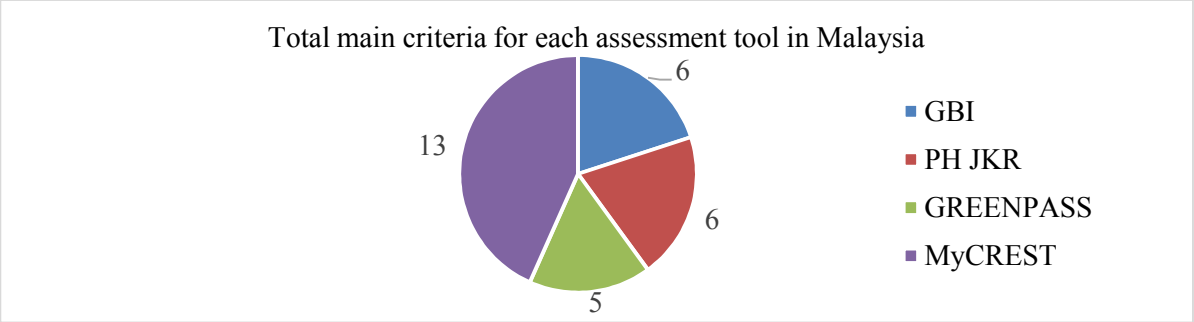

Figure 1: Comparison of total main criteria from each assessment tool in Malaysia

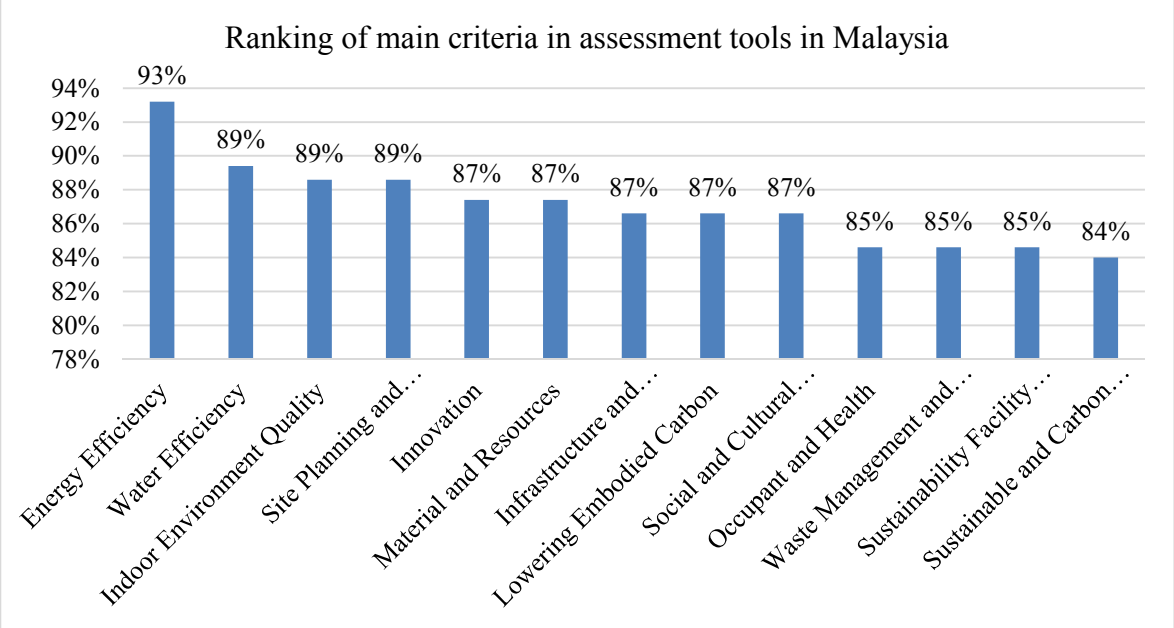

Figure 2: Ranking of each criterion in assessment tools

5.0 CONCLUSION

Green Building Assessment has been used as a tool to evaluate the green building performance and also the sustainability of the building. The factors that affect the sustainability of a building are mainly covered by the common theme of elements such as energy efficiency, site management, water efficiency, indoor environmental quality, material and resources, and also innovation. Although there are many green building assessments available, the guideline and also application for each assessment varies from one another. Some assessments as well as the criteria involved can be improved to ascertain more sustainable assessments so that it can be evolved in the future.

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