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CONSTRAINTS AND POTENTIALS FOR IMPLEMENTING THE GREEN BUILDING RATING TOOL FOR GOVERNMENT BUILDINGS IN MALAYSIA

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Abstract

The green building movement is growing rapidly across the world. In Malaysia, there are a few government buildings built to promote the practice of energy efficiency designs; for example Low Energy Building by The Energy, Water and Communication Ministry (KeTTHA). However, this building was not classified or rated as a green building design because it does not acquire any certification of green building index. This paper will discuss the necessity for government buildings to obtain certificates of green building rating tool. A survey was carried out on some of the building industries' representatives such as Government building implementers, architects, engineers, educators, contractors and federal government agencies. Based on the survey, this paper has pointed out the constraints and potentials for implementing the green building rating tool for government buildings in Malaysia.

Keyword: Green Building Rating Tool, Green Policy Development.

1.   Introduction

To ensure green building development is pursued by the building industry, Larsson (2000) suggested four categories of measures which ought to be taken by the government and the private sectors, 1) regulations, 2) enabling mechanisms i.e., education & training programmes, 3) financial incentive programmes, and 4) measures to change market demand. A number of these measures have been adopted by the Malaysian government including policies, regulations and programmes. However, they are still inadequate to mitigate the implementation of the rating tool.

During the United Nations Climate Change Conference (COP 15) December 2010, Malaysia is committed to do its best in combating climate change by adopting a voluntary national reduction of carbon dioxide (CO_2) emission of up to 40% by 2020 compared with 2005 levels. This commitment entails a reduction of 50 million tonnes of CO_2 emission per year by Malaysia. Cumulatively, this figure has to come from three major areas – energy efficiency, reducing and managing of solid waste, and renewable energy. Energy efficiency will have to contribute about nine million tonnes of CO_2 emission reduction per year from 2010 to 2020 (Khazanah Team analysis; UNFCCC; Copenhagen Accord).

In year 2009 Persatuan Arkitek Malaysia (PAM) with Pertubuhan Jurutera Perunding Malaysia (ACEM) had launched 'Green Building Index'(GBI). GBI is the only one and the first green building rating system Malaysia. It has been introduced by professional body but not the Government to provide rating to private building in Malaysia. Nevertheless Malaysian Government is fully supports the GBI when during the table of 2010's budget, government has given priority to make more environment-friendly products or services. In the budget also an estimated of RM 1.5 million was to be given as loan to any company who can produce and supply any products related to green technology. Government had also given incentive by giving tax relief to building owner that obtains GBI certification. Building buyer that purchases any building with GBI certificate also is able to stamp duty release (that effect if purchased within October 2009 until 31st of December 2014).

Green building rating tool provides a platform or a standard measurement of how green the building is. This tool will be able to determine whether the building truly performs the greenway or just a green wash, and it will tell whether a building is really green or otherwise. Without green building rating tool, it is hard to draw a line and anyone can claim that a building is green but do not have the indicator how green it is. The rating tools

can give the advantage in assessing a building or its performance in term of criteria and determine whether the building performing in a holistically green.

In Malaysia there are a few governments building trying to promote the practice of energy efficiency design such as Low Energy Building by The Ministry of Energy, Water and Communication (KeTTHA). However this building is not classified or rated as a green building design because it does not acquire any certification of green building rating tool. Therefore it is important now for the government building to be rated as this will ensure its green or energy efficiency in the long run.

In the commercial and institutional sectors, if a building is not rated and certified by an independent third party with an open process for creating and maintaining a rating system, the building still cannot be called a green building. If the building owners and designers claimed that they are following the certain Building Rating Tool however not keen to apply for certification of the final building, it is really unknown if they really achieve the results of what they had claimed. "If they say they are doing on 'sustainable design,' you have the right to ask, 'Against what standard are you measuring your design, and how are you going to prove it?" (Jerry Yudelson, 2008)

With some of the issues mentioned above this paper will analyse the necessity of the government building to obtain certificate of green building rating tool. Based on the result of the survey, this paper has pointed out constrains and potentials of government building to implement the green building rating tool based on the perspectives and the experience of the respondents.

2.   Methodology

This research approached was qualitative in nature, using survey (through interview) to fulfill the above aims and objectives. The survey was conducted through a structure interview questions over the four weeks period. This relatively short period was critical for the study. While a longitudinal study lasting several months may have resulted in a greater number of responses, this would have increased the potential for bias, as new events motivated change and or new information updated the knowledge base of the respondents (Särndal and Lundström, 2005)

3.   Respondent

The target respondents was among the Malaysia Building Construction Industry player, in particular the professionals (architect, engineers, designers) from Government Agency and private sector who involved with the Government Building Construction and in this context someone one who is directly involved in development sustainable building rating tool. Their role in the Government Construction Projects are varies such as Top Management Officer and Specialist Office of Government Implementer Agency - Public Work Department (JKR), Value Management Officer of Government Central Agency - Economic Planning Unit (EPU), Research officer of Green Technology Corporation, President and Board Member of Malaysia Green Building Confederation (MGBC) and Board Member of Green Building Index Sdn. Bhd.(GBI). All Nine respondents was very experience as professional in the building construction industries, most of them had more than 21 years working experience. As shown in Table 1.

Table 1: Demography information about respondent

Respondent ID	Professional Background/ Organization	Role in the Government Construction Project	Years of Experience
1.	Architect, JKR	Top Management	➤ 21
2.	Architect ,EPU	Government Central Agency	➤ 21
3.	M&E Engineer, EPU	Government Central Agency	➤ 21
4.	Architect, JKR	JKR Specialist Department	➤ 21
5.	M&E Engineer	Green Technology Corporation. Malaysia	➤ 21
6.	Architect, MGBC	Consultant	➤ 21
7.	Architect, GBI	Consultant	➤ 21
8.	C&S Engineer, MGBC	Consultant	➤ 21
9.	Energy Engineer	Consultant	➤ 16

4. Procedure

Researcher has approached all respondents through phone and by email to make appointment and informed them of the study and then distributed a copy of the structure interview questions to those who have an interest in this research. Those who agreed to participate in the study were then made arrangements for an interview.

A structure interview schedule was designed and used to obtain information about respondent experience and knowledge. Respondent was asked about constrains and potentials if government building to implement the sustainable rating tool. Interviews with the respondents were between 45 minutes and an hour long. Interview was taped and transcribed.

All transcripts were analyzed to get the main themes and then coded according to those themes using the Nueman (2000) three phase coding system. During the first phase of coding, researcher performed an initial scan of the data, highlighting words or phrases used by the participants and locating initial themes. Researcher identified the core phase, focused on connecting themes and finding links in the data. In the final phase, researcher reread the data and illustrates the final themes. All coding was rechecked to ensure it was coded accurately as shown in Table 2.

Table 2- Coding the respond

Respondent ID	Constrain	Potential
1.	Cost	NR
2.	Operating Cost	Saving in long run
3.	Maintenance Cost	NR
4.	Cost	Saving energy, educate people
5.	No constrain	can uniform, compare for improvement and as benchmark
6.	Finance and Lack of Willingness to participate by public	NR
7.	Cost	NR
8.	process of Decision Making Level/	energy efficient and benchmark
9.	knowledge base and budget	saving and get better quality environment

5.   Result

The analysis of interviews with Malaysia Building Construction Industry player from Government Agency and Private sector have revealed three theme of the constrain and six theme potential factors to implement the green building rating tool as in Figure 1 & 2.
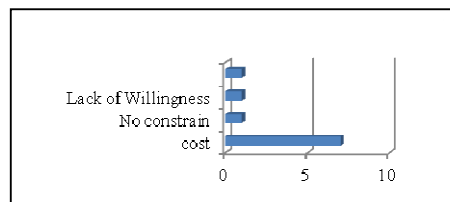

Figure 1: The constrains of government building to implement green building rating system that have been code by nos of respondent
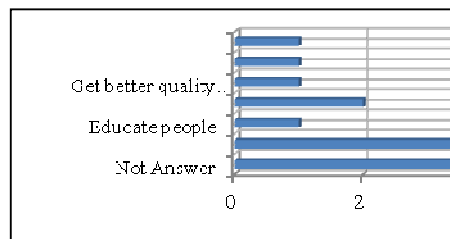

Figure2: The potentials of government building to implement green building rating system that has been code by respondent.

5.1 Constrain

Seven out of nine respondents describe that cost/ finance/budget was the main constrain in order for government building to implement green building rating tool.

'Money.. the constrain is budget, cost… to rate the building is not depend to supervisions team.. it's depend to the document, if GBI become the statutory document whatever you are, you have to follow…to rate the green building, should begin in the initial stage, eventually it going to be incurred more cost if we don't considered at the planning stage, conceptualizing stage.. and then it is very expensive.' (Respondent No. 1).

'If talking about new building.. in order to implement the sustainable passive design there's no cost but if to implement sustainable building rating tool in that building it will incur some cost to renew the certificate every three year.. The maintenance under operating expenditure.. we have no money for operating expenditure..' (Respondent No.2).

'After obtain the certificate of green building.. then we have to maintain, for examples Prime Ministry Office at Putrajaya, the maintenance contractor got concession about 30 years, which to me is not necessary, to obtain Platinum forever is not easy…'(Respondent No.3)

'For me the constrain is..when we want to rate the building it may incurred a little bit of cost, so for commercial building, private building is like investment.. so it's ok they want to advertise the building…'(Respondent No.4).

'The constrain may only be that the cost…here no rental cost, if I don't know what the government policy with regard to their own office and building, if they will to rate commercially and say the cost per square foot of rental because of the location, if we measure the cost per square foot of rental as commercial rate then government will look at their building in the totally different way, so it really to do with realistic agreement….' (Respondent No. 7).

One respondent highlighted that besides the cost, the knowledge base was the other constrain for government to implement the green building system.

'The constrain are.. there are two constrain, the first constrain is the knowledge base, the knowledge base is not there so we have to build up the knowledge base, the second thing is budget that linked to knowledge base, you do not have the people to sell the ideas to get the budget, you got to be able to sell the idea.. if you do this, we can save about 30% or 50% of energy and payback is about 2 years or 3 years, you know it's very good thing to do..' (Respondent No.9)

Similarly, respondent no. 8 has highlight about the process of decision making level that may link to the knowledge base.

'The only constraint will be in the decision making level because you guys have many layers of decision making process, very complex, so the constraint is there' (Respondent No. 8)

Lack of willingness to participate by public was highlighted by respondent no. 6 was related to the awareness of helping the environment by end user therefore respondent no 6 also mention the role of MGBC may help the government to spread awareness.

'The other constraint will be like as I mentioned earlier the lack of willingness to participate by the public.' (Respondent No. 6)

However respondent no. 5 said that there is no constrain for government to implement the green building system if both of private and government using the same matrix (refer to carbon matrix) that can be justified and comparable.

5.2 Potential

Four out of nine respondents did not answer the question. However the other four respondents highlighted that saving energy in long run was the main potential of government building to implement green building rating system.

'Potential in the long run, the maintenance. That mean if the cost of constructing the building, cost of the completing a project RM100 million, actually cost of maintaining it another 20 years would be five times or six times or even 20 times that. So actually In the long run a lot potential of saving if we do it now...' (Respondent No. 2).

'but for government building…just to be proud that our buildings obtain the certificate of GBI besides of saving the energy and environment..(Respondent No.4).

'potential is the same as any other building because the building is there and it operated in a certain way, then you have to find out, you know, what are the items that need to be replaced. What are you trying to drive, are you trying to achieve energy efficient building, are you going for sustainable building, if that is the case, then you need to do a gap assessment and I think the gap assessment is the same as all buildings.' (Respondent No. 7).

'The potential to implement the green building is very huge, existing building if you retrofit it well; you can actually cut the energy usage down to 50% easily. Many government building now, like hospital evens school, universities they have the electricity bill RM1 million a month, so we are talking about a lot of money here..,' (Respondent No. 8).

Respondent no.5 reported that government building have a lot of potentials if implement the green building system by the uniform the green building matrix using the carbon embodied, make comparison for improvement and became the benchmark. This statement is also similar to the comment by respondent no. 8.

'the only beauty about rating tool is actually telling you … what that my building is gold or yours are only silver likewise. That benchmarking can be done.' (Respondent No. 8)

Another potential factor that was highlighted by the respondents as important in implement the green building system into government building was to educate people and get the better quality environment.

'Whatever the Government implement, other will follow, people can see the potential is can educate people…many people visit the building, it becomes education to others, for example the Ministry of Energy, Water and Communication (KeTTHA), become an example of government building to respond to energy efficient requirements.' (Respondent No.4).

' if we can save about 50% and by saving this half we actually getting the better environment to the building.. and by improving these entire things you got saving and you give better quality to the people.. and that will give impact to government also..you can see the government actually improving and this involve training, facilities for people and how to maintain it well' (Respondent No. 9).

6. Discussion

Finding of the research has shown that the cost, lack of willingness to participate, process of decision making and the knowledge base was four main constrain for government to implement the green building rating tool for any government buildings.

Early finding shows that there is no significant effect on cost if the decision to implement the green building rating tool was made at the initial stage of the government building project. However the cost of maintenance was the main obstacle because it was under the operating expenditure cost. The budget of operating expenditure had to priorities for other important operating expenditure (Mohd. Radzi, EPU). Cost is always a barrier both construction cost and the cost of services for studying green options and for certifying the projects. Nevertheless in five years green building will be ubiquitous.

The knowledge among government officers about the green building were the main constrain which government should build up the knowledge of the officers. The officers should have an idea and knowledgeable in green building so that the decision can be made at the initial stage of the building project. Others have argued also that the extra cost involved will gradually decline as new practice and technology are developed and accepted by the market (Lee and Yik, 2004; Prakash, 2002).

Education about the green building was very important to promote to stakeholder by giving proper training. This training sector can become the resource center were all data will be managed properly. According to Owen (2006), the substantial intellectual, financial and time commitments required from all members of the

project team. Everyone must be aware of the opportunities and complexities for undertaking a Green Building Rating.

Nevertheless, this study has identified six potential for having the sustainable rating tool in government building saving the energy for long term, can educate people, can uniform building sustainably, can compare for improvement, can be benchmarking and can get better quality of environment.

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