



## A REVIEW OF SUSTAINABLE DEVELOPMENT FOR HOUSING SCHEME IN MALAYSIA

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**KEYWORDS:** Sustainable Development, Housing, Stakeholders.

### ABSTRACT

The growth of population in Malaysia is increasing. This means the need for buildings and infrastructure will also increase. The implementation of green concept in construction industry is really important as it can reduce the negative impacts. However, developers still using conventional way to construct the housing. This gives huge impact to our environment and also human health. Meanwhile, there are actually some barriers hinder developers to adopt this in their projects. Besides, there are some efforts made by government to encourage developers to adopt green in construction but unfortunately the progress is slow in Malaysia. In this study, the perception of stakeholders on sustainable housing will be reviewed. Thus, this study could really help our awareness on environment and create a more healthy living space to for stakeholders.

### INTRODUCTION

Housing industry is one of the main drivers in any country's development. Housing industry contributes to the economic and social development but lacking in terms of environmental protection. In contrast, sustainable housing should reflects the sustainability delivery and contribute to ecological protection and resource-efficient. Green housing is defined as a home that is space and energy efficient, at the same time it provides healthy environment to the resident stage (Alias, Sin & Aziz, 2010). As Malaysia is a developing country, the growing of communities give a huge impact to the environment. Therefore, by adopting this green technology in construction industry, it could bring a lot of benefits in economy, social and most important is the environment. Green homes in Malaysia is still very new to consumers.

### RESEARCH BACKGROUND

Construction industry is one of the industries which encourage the development in Malaysia (Sahat, 2012). The gross domestic product (GDP) during year 1990 to 2010, construction sector contribute a total of 4.1 percent (Khan, Liew&Ghazali, 2014). This means construction sector is bringing the economy growth in Malaysia. However, it is also brings damage to the environment and human health. The existing of GBI also aims to encourage the developers to build more sustainable buildings and leads local property industries to develop a more environmental friendly building. The rating system will be used and award will be given if the building reach certain scores. However green concept in Malaysia is still at a moderate level but in the future it may turn out into a different situation (ZainulAbidin, Yusof&Awang ,2012, Mohamed, Seow& Goh, 2014). Thus, future green homes projects development will be the concerned among the industry.

### PROBLEM STATEMENT

According to a study by Klufallah et al. (2014) showed that the average carbon emission of conventional house was 733.70 kg CO<sub>2</sub>/m<sup>2</sup> and sustainable house was 698.01 kg CO<sub>2</sub>/m<sup>2</sup>. Moreover, it also proved that the conventional housing project emit 4.8% of carbon more than sustainable housing project. From this statement, it really showed that sustainable housing can really reduce the carbon emitted to the environment and harm the environment. However, green homes concept can be said is a new thing in construction industry Malaysia. The awareness on constructing sustainable building is still very low among the construction practitioners (Shafii, Ali & Othman, 2006). There are some barriers hinder the green homes projects develop in Malaysia. Therefore, the perception of the developers on this issue need to be studied so that in the coming 5 years this situation might change.

In Tenth Malaysia Plan, government concerns on the sustainable development in Malaysia. In this plan, it focus on the sustainable housing and tax incentives for buildings and designs that are environmental friendly. However, the reality is incentives that government provided are not really attract the developers (Md. Elias et al.,2013). Thus, for the coming years, developers might change their direction to green development, but at this moment, green movement still at a slow pace. Sustainable concept in Malaysia is not compulsory to be adopted as most of the buyers do not demand for it. Besides, developers are hesitant to focus on something new as they are



comfortable with their business attractiveness (Abidin, Yusof& Othman, 2013). Even the developers are interested in getting green certification but this will add more cost on the projects. Thus, developers' commitment in green movement need to be figured out in order to know their needs.

## OBJECTIVE

Objective of this paper is:

- To investigate the perceptions of stakeholders with regard to the sustainable housing.

## RESEARCH SCOPE

This study is mainly focus on stakeholders such as Local Governments, developer and construction firms in Kuala Lumpur. From the REHDA members listing (2015), it showed that there are a total of 192 firms in Kuala Lumpur and about 134 Local Governments in Malaysia (Mohamed, Seow& Goh, 2013).

## SIGNIFICANCE OF STUDY

This study is to investigate developers' perception with regard to sustainable housing. Thus, this able to give a clear picture to the other construction practitioners to prepare for the coming years and change the direction from conventional practice to green practice. Besides, by building green homes it can bring numerous of benefits to construction industry. Moreover, green homes are friendly to environment since the power source is from renewable energy (Alias, Sin & Aziz, 2010). Thus, from this study, it is able to show the commitment of the developers on green home projects. From the commitment level of the developers, it helps the related parties take a concern on the issues and any improvements can be carried out in the future. Lastly, this study can be used in any academic study or make it as a reference in a study for sustainable housing.

## LITERATURE REVIEW

### Definition of sustainable housing

When it comes to sustainable housing refers to a structure and using process that is environmentally responsible and resource-efficient throughout a building's life-cycle from design, construction, operation, maintenance, renovation and demolition (Karuppanam and Sivam, 2009; Pollen et al, 2011; Ibeh and Azuh, 2011). Besides, green home also stated as a home that is a part of sustainable development. Furthermore, it can only call as green home if it is fulfill some particular requirements and reduce the impact to the climate change (Tan, 2014).

### Definition of stakeholders

Stakeholders are organization that involved in housing development such as Local Government, developers and construction firms (Mohamed, Seow& Goh, 2014). A construction developer is an individual or association involved in the procurement of a specific are and development of structures on a land (Fellows, 2011). In Malaysia, Real Estate and Housing Developers' Association Malaysia (REHDA) is a representative body for private developers (REHDA, 2015) and being included principally in support and administration. Besides, REHDA is exceptionally respected by both people in public and private sectors for its dedication to country building and wellbeing of life through sustainable development.

Job scope of a construction developer are included management, assembling a team, financing and manage project timing (Fellows, 2011). As a developer, project management skills are needed when running a project. Besides, developer would also need a professional team to in charge the construction project. Lastly, a developer also need to evaluate the feasibility of a construction project. This feasibility studies are including development site securing, financing and naming an expert group to embrace the design and construction.

### Characteristics of sustainable housing

Characteristic is a particular feature that use to differentiate the green homes projects from others. There are few characteristics of green homes will be listed below.

#### *Energy efficiency*

As stated by Xia, Zhu & Lin (2007), the theory of green building means the load or burden from the building to environment is low but higher energy efficiency. In the meantime, green structures ought to give agreeable, protected and solid situations for individuals. Thus, green homes are concentrate on energy savings. For example, install solar panels in green homes because it is a renewable energy.



### ***Water Efficiency***

Even Malaysia is a country that has high average rainfall per year but Malaysia no longer can really expect that there is a perpetual supply of water (Tan, 2014). Therefore, low-flow water fixtures could be introduced in green homes to reduce the utilization of water. Another alternative way to utilize water in green house is to install water management system which will use grey water instead of fresh water for irrigation (Ismail et al, 2013).

### ***Resource efficiency***

Raw materials are the very basic thing to build any building. Consuming too much of raw materials could harm the environment and cause global warming. As affirmed by Obata et al. (2005), resources in one of the essential element that included in sustainable development. Alternative resources can be used to substitute the main resources and it can form again in a brief time (Ismail et al, 2013).

### ***Indoor air quality***

Good indoor air quality is an important characteristic that need to include in green homes (Sparks, 2007). Good indoor air quality makes the occupants have a more healthy space to live with. Therefore the use of low-toxicity finishes is an excellent practice in green home (Tan, 2014). Materials that use for finishes like painting should use low volatile organic compound (VOC) paints. This is because VOCs are organic compounds which can harm human health and environment (Hubert, 2010). Furthermore, VOCs can evaporate directly into indoor air in room temperature which is hazardous to the occupants in the house.

### ***Protection and safety***

Protection and safety is one of the important criteria in green homes. A safe living area is a must for house buyers as they do want to live in a secure place. Besides, green homes are usually should be pleasant and fulfilling than conventional housing due to the overall design which is special and make the environment more better (Ismail et al, 2013).

### ***Sustainable site planning management***

As mentioned in GBI assessment criteria for residential new construction, sustainable site management and management is one of the part that developer needs to achieve in order to get award form GBI. This is a necessary component in green home projects. This included site planning, construction management, transportation and design. Sustainable design and site planning are both important thing that need to be included in green home projects. Furthermore, storm water management on site is necessary in order to have a ecological construction site (Sparks, 2007).

### **Barriers using green in housing projects**

When building green homes, there are some barriers which will definitely make the developers face the difficulty to build it. The barriers are usually come from the technology, cost and also the buyers.

#### ***Lack of technology***

As mentioned by Alias, Sin & Aziz (2010), green technology in Malaysia is hard to obtain compare to other countries even the government trying to promote sustainable development. At the same time, Dirsrishan (2012) also mentioned that green technology in Malaysia is unavailable. If this technology is trying import from overseas, this will add extra cost on the housing development.

#### ***Lack of expertise***

The lack of local expertise in green technology is one of the barriers in Malaysia (Md. Elias et al., 2013, Mohamed, Seow & Goh, 2013). This means knowledge on green technology is not as advance as other country.

#### ***Lack of demand***

Local people demand on green homes are actually very low and lack of understanding (Md. Elias et al., 2013). The green home concept is still at the infant stage in Malaysia, which local buyers do not really understand the benefits of green homes plus the green home's concept (Alias, Sin & Aziz, 2010). Therefore, this contributes to low demand from the local buyers towards green homes and conventional houses will still be their first choice.

#### ***Higher cost***

Study from Shafii, Ali & Othman (2006) stated that many of the company stakeholders said only going green is cheaper or not they would not go for it. Besides, workers need to send overseas to get training course so that the



workers have the skills and knowledge on green home. But this will cost the company few millions for doing training (Alias, Sin & Aziz, 2010).

#### ***Builder Incentives***

According to Davis (2001), low incentives provided for builders is one of the barriers as the builders do not have large capital. Besides, Md. Elias et al.(2013) also mentioned that incentives provided by government are not really effective to encourage the developers. Cost to build green is really not cheap and very costly. Therefore financial incentives are really needed to make local developers start to invest on it.

#### ***Client Knowledge***

The knowledge of client on green is low and they normally comfortable with using conventional ways. Lack of information and regulation about green are also significant barriers that prohibit the clients to understand what sustainable building is. Besides, when they are not familiar with this, they need more time to study all the related information and requirements.

#### ***Lack of Awareness***

The lack of awareness for sustainable building can be categorized into two groups: construction practitioners (Shafii, Ali & Othman, 2006; Mohamed, Seow& Goh, 2014) and public (Samari et al., 2013). If the construction practitioners do not understand the concept and the benefits, they would not implement this on their projects. Besides, as the public lacking in awareness on this, they would not purchase green homes (Alias, Sin & Aziz, 2010).

#### **Cultural green home development in Malaysia**

According to Green building Index (GBI, 2013), it stated that GBI is a rating tool that used to rate the construction projects and promote sustainable development in Malaysia. Besides, it is also used for give awareness about environmental issues for the construction practitioners as well as public. As compared by two years ago, the green housing projects in Malaysia have increased and this proved that by launching GBI in Malaysia can really increases the green housing projects in Malaysia.

As GBI rating tool has launched on 2009, developers could follow the criteria of green home developments in order to develop the green homes (Ismail et al, 2013). But according to ZainulAbidin (2010), the green movement in Malaysia is still at an infant stage. Therefore a study that done by Chan, Lee & Lee (2014) has stated that even the it is still at its infancy stage, but the GBI certified buildings number is increasing, this means that the awareness towards sustainability issues are concerned by the nation. This can actually proved that Malaysia construction industry is actually towards a more sustainable direction. Malaysia green housing projects are actually increasing year by year. Besides, the green housing projects are not only get certified by local GBI rating tool but some also get certified from oversea.

### **METHODOLOGY**

According to Kothari (2004), research means search for knowledge and related information on a particular topic. While research methodology means use a systematic method to get solution for a problem (Rajasekar, Philominathan, &Chinnathambi, 2013).Therefore, to get the research done, it must go through the process of indentifying problem, gather the related data and analysing the data and finally get conclusions and solutions.

#### **Research Methodology**

According to Thomas (2003), quantitative research is concern on numbers and statistical methods. In other words, it means by using this method, the data will be collected from questionnaires and transforms the data into graphs, charts or tables. By using quantitative method, the data collection instrument will be used in this study is questionnaires. Time constraint is the main obstacle in this study. Thus, by using questionnaires, data is able to get from large number of respondents within limited time and at the same time, it is able to reach the objectives of this study.

#### **Research instrument**

A questionnaire is a list of questions which prepared by researcher and respondents answer to the questions and add their own opinion if the questions require for it (Rugg&Petre, 2007). As stated by Rugg&Petre (2007), questionnaire method is not easy to be used. Certain skills are needed when developing the questionnaire.



Therefore, to ensure this study can get the data usefully and successfully, the design of questionnaire must give clearly instruction to the respondents. In addition, the questions needed to be clearly and understandable so that the respondents able to answer it (Bhattacharjee, 2012). In this study, the questionnaire is included three parts which the first part is regarding to the respondent's demographic, second part is the perceptions of developers regard to the green homes projects in the next 5 years and last part is about the developers' commitment on green homes projects. For part two and three, the questions are based on Likert scale and checklist.

### Data analysis

Data analysis is important for guaranteeing that all pertinent information is gathered and then comparison and analysis job can be done easily (Kothari, 2004). In this research, the data will be analyzed using Statistical Packages for Science Social (SPSS). SPSS is a software use to manage, present and analyze data (Landau & Everitt, 2004). SPSS works as the data from questionnaires are enter in this software and it will done the data analysis. Therefore SPSS is widely used in social and behavioral sciences. After data analysis by using the SPSS, descriptive statistics will be used to summarize the data. Descriptive statistics use numerical and diagrams method to present the information so that it is more easy to understand (Singpurwalla, 2013).

### CONCLUSION

Based on the vision of 2020, Malaysia must also ensure that valuable resources are not wasted. Malaysia land's must remain productive and fertile, water polluted, forest resources capable of generation and able to yield the needs of our national development. The beauty of our land should not be desecrated its mean of own sake and for our own economic advancement. The meaning of that statement is how most important of sustainable development for future development planning especially Malaysia. In order to archive the vision, the implementation of green concept in construction industry is really important as it can reduce the negative impact or future impact.

### ACKNOWLEDGEMENTS

The author would like to thank Ministry of Education (MOE), Office of Research, Innovation, Commercialisation and Consultancy (ORICC), UTHM, for supporting this research under the Research Acculturation Collaborative Effort (RACE: No.1517) Grant Scheme Universiti Tun Hussein Onn Malaysia.

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