

# Awareness on Sustainable Affordable Housing Among Homebuyers in Malaysia

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**Abstract.** This paper concerns about the delivery of Sustainable Affordable Housing (SAH) in Malaysia. The built environment, operation and demolition of housing have the profound impact on our nature environment. SAH can be a solution toward sustainability development because it considered from an environmental friendly, socially enhancing, and economically benefits perfectives towards housing development. This paper aims to explore the awareness of homebuyers in Malaysia towards sustainable affordable housing. This research used the method of unstructured interview among homebuyers toward SAH in Malaysia. Based on the finding of the study, the awareness of homebuyers in SAH are relatively inadequate. Respondents are required the brief explanation on concept and elements of SAH for continue the interview. Based on Porter Five Forces Model, homebuyers' requirements hold the bargaining power of customers to determine the features of housing provided by property provider. The knowledge of homebuyers on SAH is crucial for the sustainable development, because homebuyers are one of the key drivers for implementing the sustainable requirements in housing development.

## 1 Introduction

Conventional house is generally known to fulfill the basic needs of shelter for human being, whereas modern housing should integrate sustainable criteria into housing [1]. Sustainable housing concept can be rooted to sustainable development, which is defined as the "development that meets the needs of the present without compromising the ability of future generations to meet their needs in the future" [2]. It explained that the resources for our future generation depend on the current resource utilization. The amalgamation between affordable house and sustainability is vital for short term and long term development of a country. It could solve this current social issue, by saving the housing operation cost, buying cost as well as to preserve the environment resources for our future generation. For that reason, this paper concern about the delivery of SAH in Malaysia. The aim of this study is to explore the awareness among homebuyers in Malaysia. Homebuyers are crucial stakeholder in developing the sustainable requirements in housing.

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Literally, homebuyers are the end user of supply chain in housing sector. According to Porter's Five Forces [3], the bargaining power of buyer is able to influence the output of the supplier. Homebuyers' determination on buying a sustainable house influences the decision of developers in providing the types of house.

## **2 Literature review**

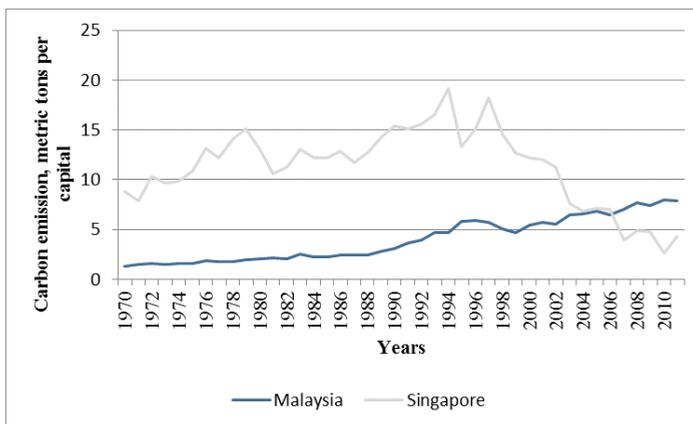
According to Department of Statistic Malaysia [4], the median income of Malaysian households are RM 4,585 in the year 2014 with 11.7% compounded annual growth rate (CAGR) compare to RM 3,626 in the year 2012. Assuming we carry the same CAGR percentage of 11.7% to the stretch of 2014 to 2016, this will result in the median income of Malaysian households being RM 5,804 monthly. According to the 'Median Multiple' methodology developed by Demographic International and recommended by the World Bank and the United Nations to evaluate urban housing markets, a house is considered affordable if a household can finance it with less than three times its annual household income (house price-to-income ratio of 3.0 and below) [5]. This suggests that houses priced up to RM 209,000 are considered affordable to a median Malaysian household. However, the developments of affordable house in the regular context focus on social and economic aspects and had neglected the factor of environmental. Sustainable affordable housing, which focuses on social and economic aspect, requires attention on environmental factors as well. This is because housing generally has a profound influence on the social-economic wellbeing of the human society and sustainability of the environmental during its production and consumption [6].

The Malaysia federal and state government has placed efforts in developing housing for low and middle income. The government has introduce housing scheme such as Perumahan Rakyat 1Malaysia (PR1MA), MyHome, Skim Rumah Pertamaku (SRP) and Program Perumahan Rakyat (PPR) and also financial aids such as Mydeposit, 20% stamp duty deduction for first-time house buyers. Despite efforts from the government, the number of affordable houses is severely insufficient. One of the reasons is due to the Malaysia's plans for affordable housing not receiving the required attention and it is not developing well. The plan of building total units of affordable house is 550,700 units between years 1986-2005; however, the completion rate is only 57%. This disappointing achievement is due to a complicated and ambiguous relationship between federal, state and local levels [7].

While there is insufficient affordable housing supply, there are needs to provide sustainable affordable housing because housing has been identified as one of the major resource users in energy and water consumption, raw material consumption and utilization of land [8]. In Malaysia, 90 percent of building is housing [9]. Buildings are at the centre of our economic and social lives, providing shelter, work places and spaces for commerce and leisure. However, according to UNEP [10] construction, operation and demolishment of buildings put a tremendous strain on our environment, buildings being responsible for a significant share of approximately 40% of global energy usage, resource consumption of more than 30% of materials used and 20% of water use and waste generation with 30% of solid waste, and 20% of wastewater. The building sector has the highest potential for sustainability improvements with large-scale reductions in carbon emissions, as well as the efficient use of resources can be achieved at low or no cost.

Despite current efforts from the Malaysian government to curb carbon emissions, Malaysia is currently rank as the 23th out of 216 countries in the world that have the largest amount of carbon emission in the year 2015 [11]. In terms of sectorial percentage, 24% of total carbon dioxide comes from the construction sector in the country [12]. In Malaysia, residential building in construction sector consists of 29.9% of total value of construction work done in the first quarter of 2015 [13]. For that reason, residential housing is one of the

factors that contribute to the emission of carbon dioxide in the environment. As displayed in Fig.1, carbon emission per capital in Malaysia increasing from year 1970 to 2011, which resulted from 1.34 to 7.9 metric ton per capital, whereas Singapore's decreasing from 8.78 to 4.32 metric ton per capital during the same period. As shown in Fig.1, Singapore has been reducing their carbon emission since 2006. It is most probably due to the implementation of Green Mark by Building and Construction Authority (BCA). This can be one of the recent indicator or reference for our building construction. The method of Singapore in achieving the carbon reduction should be introduced and compared with the Malaysian GBI in the literature where it could be one of the awareness and implementation for carbon reduction.



**Fig. 1.** Carbon emission metric tons per capital between Malaysia and Singapore [14]

Housing has the profound influence not limited to the environment only, but also in impact on the social and economic matter as well. The shortage of houses in Malaysia is decreasing the living standard, especially to the lower income family. According to National Property Information Centre (NAPIC) [15], up to the 4<sup>th</sup> quarter of 2015, Malaysia has a total of 4.93 million houses. As NAPIC does not track rural houses, assume that only urbanites were taken into account in the survey. This accounts for 70% of 30.8 million populations in Malaysia [16] which equals to 21 million people. Therefore, on average, there are 4.4 persons per household in our country which is the same ratio Australia had back in 1927. Malaysia needs to build 4 million to 7.8 million more houses to match the same ratio as the UK or Australia today [17].

In Malaysia, the green building assessment tool is the Green Building Index (GBI). The GBI rating system are integrated into 6 components which are Energy Efficiency (EE), Indoor Environment Quality (EQ), Material and Resources (MR), Sustainable Site Planning and Management (SM), Water efficiency (WE) and Innovation (IN), and each component carries different points. The allocation of assessment points is categorized by each components based on residential and non-residential groups. GBI rating classification consists of Platinum, follow by Gold, Silver and Certified [18]. Setting an example for the nation, Perdana Putra achieved a Platinum GBI rating; it is one of the iconic buildings of the offices of Malaysia's Prime Minister. In 2010, Perdana Putra was refurbished with efficient technology that reduced the building's energy intensity by 38 percent, its water usage by 40 percent and its CO<sub>2</sub> emissions by 30 percent [19]. The same initiative of environmental friendly features can be implemented in affordable housing.

SAH is a new concept to Malaysians its development certainly not common in Malaysia. Most of the stakeholders in the housing sector are not aware of this concept. In

addition, there is also inadequate understanding about the idea and benefits of SAH among homebuyers [20]. Hence, SAH plays a crucial role in integrated environmental, social and economic sustainability. SAH is not only about cheap and decent houses. There must be consideration for a boarder range of factors such as access to employment opportunities, energy efficient, interest rates and mortgage availability and so on [21]. The awareness of homebuyers is crucial for exertion in developing SAH by stipulating demands to various stakeholders and partnering with developers, homebuilders, architects, agencies, and non-profits to design, build and deliver the SAH.

In its 2007 report, the Intergovernmental Panel on Climate Change (IPCC) [22] highlighted the building sector as having the greatest potential to reduce GHG emissions, at the lowest cost. With proven and commercially-available technologies, the energy consumption in both new and existing buildings, as well as the related GHG emissions, can be reduced by 30-50% without significantly increasing the investment costs of new construction or renovation projects.

### **3 Research methodology**

The objective of the paper is to identify the awareness of homebuyers in sustainable affordable housing in Malaysia. The qualitative data was collected through a face-to-face unstructured interview, unstructured interview allow respondents to provide their opinion in almost complete freedom [23]. During the MAPEX exhibition, many homebuyers are new to the concept of this study, therefore by face to face interview allows them to ask and express their view freely.

The interview was conducted in Malaysia Property Exhibition (MAPEX) in Ipoh, Perak, Malaysia on the 31st of July 2016. This exhibition was organised by Real Estate and Housing Developers Association (REHDA) and it consisted of 51 booths and 35 developers, several bank and property agencies. This exhibition also consisted of 20,000 visitors. The total properties in this exhibition were worth approximately RM 5 billion [24]. The questions were asked to respondents was not in the order as listed below:

- a) Do you know what is sustainable development and sustainable affordable house?
- b) What are your concerns in purchasing a house?
- c) Do you know any affordable house scheme or financial aids for low and middle income in Malaysia?
- d) Feasibility of factoring environmental, social and economic features into housing by introducing sustainable affordable house.
- e) Feasibility of purchasing a house with RM 209,000 in Malaysia.
- f) Would it affect developers and the government's decision in providing SAH for homebuyers if the demand increasing?

### **4 Results and discussion**

The respondents were homebuyers in the property fair. The participants were asked on their understanding and opinions regarding sustainable affordable housing. During the interview, the respondents were asked within the scope covering sustainable development, affordable housing, sustainable affordable house, environmental, social, economic aspect of housing, affordability issue. Twenty respondents participated in the interview for this research.

The 20 respondent's profiles are displayed in Table 1. The respondents consist of 9 females and 11 males, the varying from 23 years old to 50 years old. The family size varies from 1-5 and 15 of them are looking for their first house to purchase.

**Table 1.** Respondent's profile

No.	Gentle	Age group	Family size	Purchase for first house
1.	Male	28	3	Yes
2.	Female	30-35	2	Yes
3.	Male	24	2	Yes
4.	Male	34	4	No
5.	Female	23	2	Yes
6.	Male	30	5	Yes
7.	Female	35-40	5	No
8.	Male	50	5	No
9.	Male	24	2	Yes
10.	Male	34	4	Yes
11.	Female	23	5	Yes
12.	Female	32	3	Yes
13.	Male	33	2	No
14.	Female	23	2	Yes
15.	Female	39	5	No
16.	Male	30-35	5	Yes
17.	Male	34	4	No
18.	Male	24	3	Yes
19.	Female	34	3	Yes
20.	Female	23	1	Yes

The first question of the interview for homebuyers was to determine their understanding of the term “sustainable development” and “sustainable affordable house”. The outcome of the question shows that all 20 respondents have never come across in regards to sustainable development and sustainable affordable house. In order to continue the survey more specifically, the general concept of incorporating environment, social and economy with house was being elaborated to the respondents. Furthermore, the respondents were being inquired on the integration of SAH features such as strategic location with affordable price, as well as saving utility bills in a long run by harvesting rain water and energy saving technology. All the respondents replied that these housing features are not accessible in Malaysia. From the collected responds of homebuyers, it shows that the understanding of SAH in Malaysia is relatively inadequate. This phenomenon resulted in a weak awareness SAH among homebuyers.

The second question concerned with the homebuyers purchasing a house. As displayed in Table 2, 15 respondents answered that price of the property is their priority concern in purchasing a house, followed by location, safety features, transportation and recreation facilities. Another 5 respondents answered location, follow by price, safety features, recreation facilities, and eligibility for mortgage.

The third question was regarding the understanding of affordable house scheme in Malaysia such as PRIMA, MyHome, Programme Rumah Mesra Rakyat and People's Housing Program (PPR) and also financial aids such as Mydeposit, 20% stamp duty

deduction for first time house buyer. 10 respondents implied that they are not aware on the details of the affordable housing scheme, even though these schemes are available near them. Another 10 respondents has no awareness of the schemes. This shows that the publicity of affordable house is not proficient and information is not delivered to those in needs of shelter. Although affordable houses are initiated by the federal and state government, which contains social and economic components, the aspect of environment is often not been put into attention. The fourth question was the availability of purchasing a house with RM 209,000 in Malaysia for personal residence purposes. 16 of the respondents answered it is possible. However, the house will be a house that is aged 20 years and above, and major repair work will be required, which will involve major additional cost. Furthermore, the location of the house would be in an outskirts area, which is approximately 60-80 km from the city.

**Table 2.** Homebuyer's determinant in buying a house

	<b>First</b>	<b>Second</b>	<b>Third</b>	<b>Fourth</b>	<b>Fifth</b>
15 respondents	Price	Location	Safety	Transportation	Recreation Facilities
5 respondents	Location	Price	Safety	Recreation Facilities	Eligibility for Mortgage

The fifth question is to understand whether developers and government would provide SAH in view of consumer's increase demand request on SAH. All of the respondents mentioned that they have not requested this feature from any parties, and perhaps it would be feasible if more homebuyers suggested and submitted the requests to the developers or government.

The sixth question was regarding the feasibility to factoring environment, social and economic aspects into housing by introducing SAH in Malaysia. All of the respondents answered the concept is not feasible in Malaysia as they perceived that the price of the house would be higher, as higher cost would be required to factor in those aspects into housing.

The awareness and understanding of homebuyers in regards to SAH was relatively poor as shown in the interviewers' responds. According to Porter's Five Forces, the bargaining power of buyer is able to influence the output of supplier; the stipulation of demand is able to dominate the supply requirement. The same principle could be applied to sustainable affordable housing as well. Homebuyer's determination on buying a sustainable house influences the decisions of developers in providing the type of houses. If the awareness and understanding of sustainable affordable housing for homebuyers is developed, it could trigger the initiative of developer to fulfil the customer's needs. The growth in consumers' demand is likely to encourage the voluntarily integrated sustainable features into future developments [25]. Homebuyers do not feel the necessity to incorporate any sustainable concept in their houses, because Malaysia is a country that is sanctified with abundance of natural resources such as water, oil and energy. Thus, there is the lack of exigency of this issue.

## **5 Conclusion**

The aim of this study is to explore the understanding and awareness of homebuyers in Malaysia towards SAH. The study has found out that the awareness in SAH among homebuyers is relatively poor. However, if the awareness and understanding of sustainable affordable housing for homebuyers is developed and the request is computed to the

developers, it could trigger developers to fulfil the customers' needs. The growth in consumers' demand is likely to encourage developers to integrate sustainable features into affordable house. According to Olanrewaju and et al [26,27], the Royal Institute of the British Architects (RIBA) Plan of Work 2013 suggests to use in delivery of SAH by various stakeholders. For instance, Malaysia government, architect, developer, engineering designer, manufacturer, buyer, supplier and so on. In this research, we have only focused on the awareness of homebuyers. The formulation of policies and stakeholders engagement required incorporation and feedback. Future research may aim to study the awareness, understanding, commitment, analysis of obstacles and roles of duties of each stakeholder in the delivery of SAH. The SAH would greatly achieve the sustainable development and not only fulfill the needs of current generation, but also preserve the resources for future generation to fulfill their needs as well.

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