CHALLENGERS TO PRACTICES AFFORDABLE SUSTAINABLE HOUSING PROJECT: AN INSIGHT FROM CONSTRUCTION PLAYER IN KLANG VALLEY

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ABSTRACT— *Malaysia government had implemented several affordable housing programme such as Program Bantuan Rumah (PBR) and Perumahan Rakyat 1Malaysia (PR1MA) for low- and middle- income households to cope with the problem of mismatch between supply and demand of housing due to socioeconomic change, urbanization and evolving population. However, Malaysia still facing a shortage of affordable homes for the masses. This research is to identify the challenges faced by the construction player particularly in Klang Valley to deliver affordable sustainable housing projects. The structured questionnaire survey has been sent to 170 construction players around Klang Valley. The finding shows that high cost, lack of enforcement, and lack of demand from stakeholders it's the fact contribute to the challenges to be faced to deliver affordable housing projects. Therefore, the recommendation to make this affordable housing project can be fully implementing its awareness on the benefit this concept may offer as well as fully supported by the ministry of housing by offering certain incentives to the construction players.*

Keywords— Affordable housing project, sustainable housing, construction players, mismatch

I. INTRODUCTION (*HEADING 1*)

Malaysia, a developing country moving toward industrialization, will definitely require a good and comfortable housing area for all the citizens. The government has recently introduced and highlighted sustainability initiatives in housing development. However, due to current law and legislation, it more focuses on the affordability of development housing and hence loses sight of social and cultural aspects [1]. Therefore, there is a need to implement sustainability in affordable housing development, not just to cope with the environmental problems that happen in Malaysia, but also to ensure the country's development. Affordable sustainable housing is a new concept that should be introduced to the construction practitioner. It could be broken down into two sectors which are affordable housing and sustainable housing. The definition for these two conceptual ideal will be discussed in detail. In order to achieve the new concept, the criteria from affordable housing and sustainable housing will be discussed together. By referring to these two concept's criteria, the affordable sustainable housing criteria will be then be found. However, due to the concept was still new, there were problems that restrict the construction practitioner to implement the concept of sustainability into affordable housing. The restriction will also be discussed in this chapter in order for the construction player to have a clearer concept of affordable sustainable housing hence find the solution to overcome the problems.

However, some authors mention that affordable housing is the relationship between housing and people. A range between 15 to 30 years will be given for the client to obtain affordable houses. The affordability is depending on the ability and desire of the client to own or buy houses. For the certain client, all house is considering affordable for them; however, for a certain client, no housing is affordable unless it is free [2; 3].

According to Ling *et al.* [4], other than financial affordability, affordable housing is houses that sufficient in quality and location. Affordable housing is also a concept which use to explain socioeconomic and development environments. It was aimed to make sure that every income-earner cluster could afford the houses provided. There is no specific definition for affordable sustainable housing found throughout the research, hence the meaning of affordable housing and sustainable housing will be defined separately. By referring to both terms, a rough idea of affordable sustainable housing will be defined later on by considering both term definition. Sustainable Development (SD) had been defined by the Brundtland report as ‘‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. The definition of sustainable had consisted of two key common concepts which is the concept of needs, which to make sure that the poor's essential needs are adequately met; and list out every restriction that happens from the technology and social activities that affect the environment's ability to achieve the present and future needs.

According to Global Property Guide, Malaysia's nationwide house price index rose by 5.10% (or rose only by 0.73% after adjusting for inflation) during the year to end-Q3 2017. This was the lowest price increase since Q3 2009, according to the Valuation and Property Services department (JPPH). During the latest quarter, the house price index rose by 0.7% (or fell by 0.5% when adjusted for inflation). By referring to Figure 1 in 4Q 2017, the Malaysian House Price Index (MHPI) increased by 5.8% (3Q 2017: 6.5%), amid slower growth in prices for both landed and high-rise properties. According to the data from National Property Information Centre (NAPIC) by states, the slower increase in MHPI reflected mainly the moderating trend in Kuala Lumpur, Selangor, Negeri Sembilan, and Melaka (refer to Figure 2).

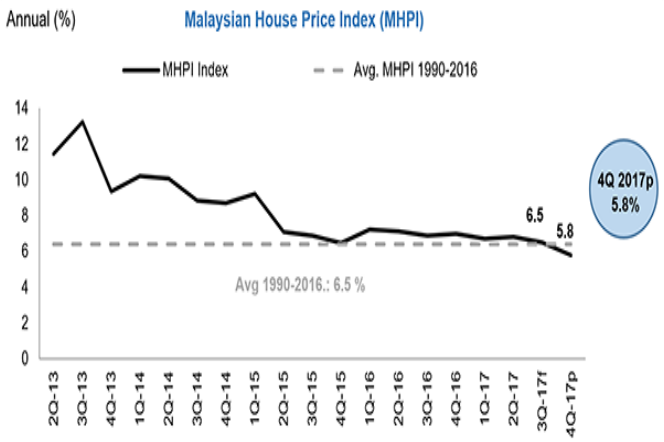

Figure 1. Malaysia house price index from 2013 to 2017
Source: National Property Information Centre (NAPIC)

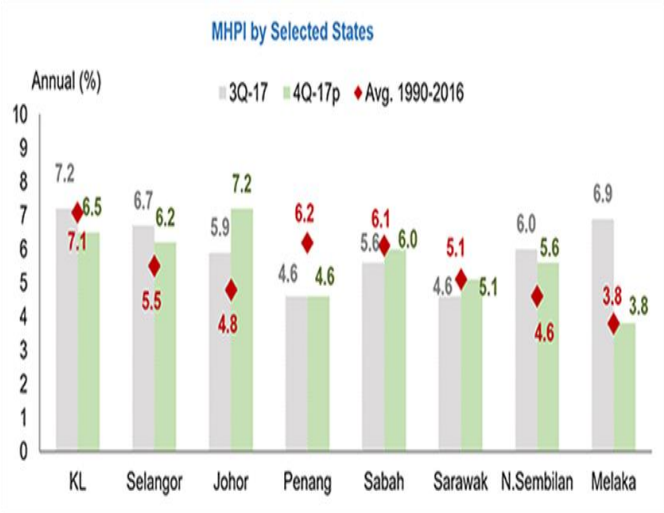

Figure 2. Malaysia house price index by selected states
Source: National Property Information Centre (NAPIC)

New data based on the latest Household Income and Expenditure Survey 2016 indicates that housing affordability is still an issue in Malaysia. In 2016, the actual median house price was RM313k but the Malaysian monthly median household income was given RM5,228 which considered unaffordable compared to the estimated maximum price of an affordable home (RM282k). By referring to Figure 3, among the selected states, houses in KL, Penang, and Sabah were the most unaffordable as reflected by the gaps between the actual median house price and the estimated maximum price of an affordable home, which is computed based on the monthly median household income in the respective states. The prevailing market prices in key urban employment centers were also beyond the means of households, with varying degrees of severity across locations. Among the key city centers, houses were most unaffordable in Georgetown. Georgetown's actual median house price of RM600k is much higher than the estimated maximum price of an affordable home at RM294k, based on its monthly median household income of RM5,477.

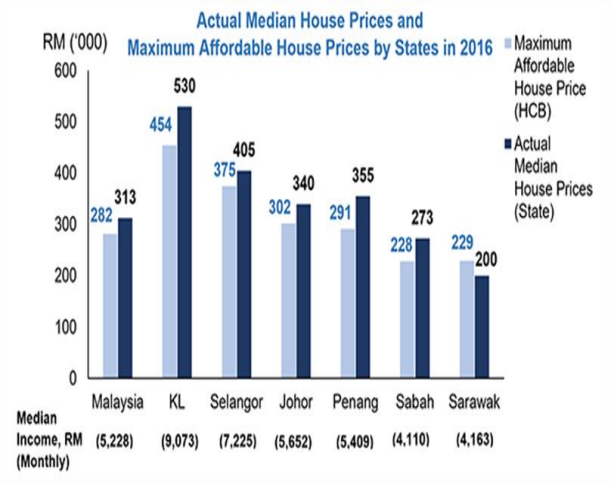

Figure 3. Malaysia affordable house price index by selected states
Source: National Property Information Centre (NAPIC)

National Property Information Centre (NAPIC), Department of Statistics, Malaysia (DOSM), and Bank Negara Malaysia (BNM) defining the maximum affordable house prices are estimated using the Housing Cost Burden (HCB) approach, which states that a house is deemed affordable as long as housing costs do not exceed 30% of net monthly income. Estimates were based on the latest available official data on household income. Other factors considered include prevailing interest rates and loan tenure of 35 years. Calculations consider the disposable income of households (gross minus EPF, SOCSO, and income tax). The reason contribute to the unaffordable market is due to the unresponsiveness of housing supply to effective demand, the lack of houses launched below the three times median multiple prices combined with a high number of high-ended launches. Although Malaysia had initiated several affordable housing programs, some of the housing projects had been identified as problematic housing projects, which have problems in settlement and provision of quality housing. Factors such as inflation increase the cost of new and existing homes and consequently reduce the quality of construction and life. For instance, the determination on the challenging factors makes Malaysia's construction players does not want to play with this concept of project answering the issues highlighted.

Ease of Use

II. THE CHALLENGING FACTORS TO IMPLEMENTING AFFORDABLE HOUSING PROJECT

Referring to the table below (Table 1), shows the challenges of implementing the sustainability concept in affordable housing. There are 13 challenges stated in the table by different researchers. The most popular challenges that faced by the construction player were the high cost of sustainable housing and lack of awareness and understanding which discussed by seven (7) different authors. One of the most challenging factors that discuss by most of the researcher is the high cost of sustainable housing. According to Shafiei *et al.* [5], sustainable

housing development is economically non-viable as it requires higher capital upfront cost which potentially can cause high project cost. For example, a solar panel system produces energy efficiency but high installation cost. Besides, the prices of sustainable material such as low volatile organic compounds (VOC) paints will be higher when compared to normal paint. This is because sustainable material is hard to get in Malaysia. Other additional costs which lead to the high cost of sustainable housing are higher purchase costs of technology, the learning curve cost of sending a worker to have overseas training on skills and knowledge of the green home, and employing skilled labor for the sustainable project [1]. Public awareness is an important role in promoting the sustainable housing concept in Malaysia. The public and construction practitioners didn't aware of this concept, hence doesn't understand the importance and benefits of implementing sustainable building. Due to the low awareness of societies, the demand for sustainable housing still remains low. People tend to buy another type of house which is cheaper in price. They felt that it is unnecessary to have a sustainable concept in their houses as Malaysia is rich in natural resources [1]. According to Goh Kai Chen [1], in the Johor Bahru area, only large developers implement sustainability in their housing projects. Other developers not eager to merged the concept in their project due to a low level of understanding, and budget constraints. Lack of expertise and technology is another barrier faced while implementing sustainable housing in Malaysia. Some of the green technology and material is hard to get in Malaysia, hence the only way is to import from overseas. However, it will increase the cost of housing and the difficulty in developing sustainable housing [1]. Besides, sustainable housing design requires architects and engineers who have the knowledge and experience in the area. Hence, the limited number of local professionals restrict the company from implementing sustainable concepts as no effective suggestion and advice given on the design. Another reason the sustainable housing concept was not implemented is due to a lack of training and education. According to Goh Kai Chen [1], stakeholders' education about sustainable development still low due to no education about sustainable design was given during study time. Hence, they do not want to involve in sustainable development which they not familiar with. In Malaysia, 70% of the construction professionals such as architectures, engineers, and quantity surveyor unable to transfer their knowledge of green features to practical zone as they did not involve in any green project, and out of 44% of them believe that they don't need to commit in green building [5]. Besides, employees found that it was difficult for them to attend sustainable technology training due to the limited number, of course, offered [1].

Table 1. Challengers Factor in Implementing Affordable Housing Project.

Challenges / Authors	Goh Kai Chen, et.al (2013)	Mcmurray et al, (2014)	Abidin et al (2013)	S Z H Syeh Jamaludin, et al (2018)	Ayedun&Oluwatobi (2011)	Saleh and Alalouch (2015)	Chukwujekwu (2006)	Shafiei et al. (2013)	Chau Sim Yee (2015)	Total Referred
High Cost of Sustainable Housing	√	√		√	√		√	√	√	7
Lack of Awareness and Understanding	√	√		√		√	√	√	√	7
Lack of Expertise and Technology	√			√				√	√	4
Lack of Enforcement	√									1
Lack of Training and Education	√		√	√				√		4
Lack of Commitment from an organization	√		√	√						3
Lack of Requirement and Demand from Stakeholders	√							√	√	3
Financial Capability of Developer		√	√	√					√	4
The difficulty of Obtaining Local Green Products			√	√			√			3
Lack of Coordination and Monitoring				√	√					2
Lack of Government Incentives and Rebates				√	√		√	√		4
Inaccessibility to Low and Cheap Housing Financing				√	√		√			3
Lack of Adequate Local Green Technology and Equipment				√		√				2

III. METHODOLOGY

In a nutshell, a literature review was carried out to explore the challenger's factor has been discussing by others researchers. The collection of data will be divided into preliminary and secondary data. The preliminary data is collected through questionnaire surveys (i.e. Google Form)

from the targeted respondents in the construction industry and the results of the questionnaire surveys will be evaluated. As for the secondary data, it is derived from articles, journals, research papers, reports, conference papers, and resources available from the internet. The population sample was restricted to Klang Valley. The research sample consists of 300 respondents and only 170 responded and undertook questionnaires. Apart from that, the research sample is sent to construction players which consisted of Architecture, Engineer, Contractor, and Quantity Surveyor. These participants are experts who had great experience in their respective fields of work. All data assembled from secondary data information and primary data information will be broke down together. From both data information collected, the goals and the point of the research will be fulfilled.

IV. RESULT AND DISCUSSION

The survey form had been distributing to construction players which includes architect, engineer, quantity surveyor, project manager, and contractor. Based on Figure 4, the majority of the respondents are from the profession of the contractor, representing 55 respondents (32.35%). Followed by 40 architects (23.53%), 35 engineers (20.59%), 25 quantity surveyors (14.71%), and 15 project managers (8.82%).

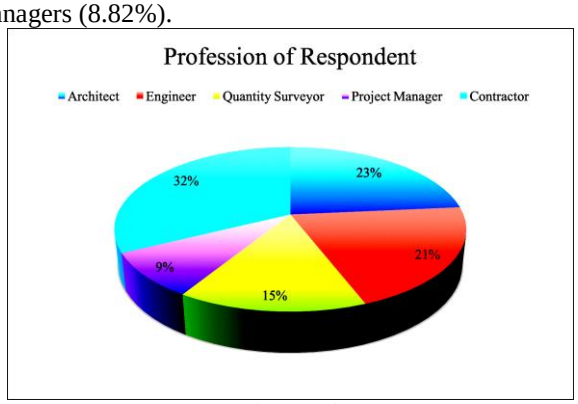

Figure 4. Profession of Respondent

Challenges on implementing sustainability concepts to affordable housing will be discovered in this section. Based on the respondents' experience in the construction industry, they have pointed out the problem that facing in the real-life industry on implementing sustainability concept to affordable housing and the result had been illustrated in Figure 5.

The highest rate of challenges that totally agreed upon by 99 of the respondents were the high cost of sustainable housing, lack of enforcement, lack of requirement and demand from stakeholders, and lack of coordination and monitoring. Followed by the challenges of lack of expertise and technology, lack of commitment from the organization, the difficulty of obtaining local green products, and inaccessibility to low and cheap housing financing, which totally agreed by 91 respondents. Besides, there were 77 respondents who totally agreed to the challenges of lack of awareness and understanding, lack of training and education, lack of government incentives and rebates.

V. CONCLUSION

Affordable Sustainable Housing can be achieved to implement among all construction players if the challenges factors to implement the concept can be overcome. This can be started with clearly defining the concept of Affordable Sustainable Housing concept itself.

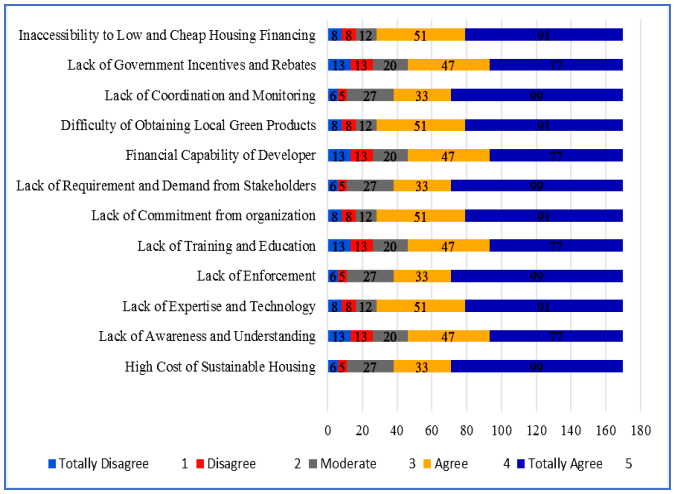

Figure 5. Challenges on Implementing Affordable Sustainable Housing Project

When the construction players have a clear concept about affordable sustainable housing, they will only consider working on the concept as they already know about the risk and benefit that brings to them when they implement the concept. Furthermore, the clear identification of the criteria of affordable housing and sustainable housing as well as the emergence of these two concepts will navigate to a clear direction on implementing the concept of Affordable Sustainable Housing itself. Criteria such as resources efficiency, energy-efficient, and water efficiency should be well planned as it will bring benefits to the environment and future generations so that the new generation would face the problem of resource scarcity. Last but not least, more campaigns about the concept of sustainable affordable housing should be held all over the country in order to increase awareness and understanding of public towards the sustainable affordable housing. Construction players such as developers should invite more expertise or import new technology into the country. Government should also take initiative in organizing training courses about sustainable affordable housing concepts for the construction professionals so that they could implement and emphasize the concept into their current or future project.

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