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Green Housing Development: Is it Really Sustainable?

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Abstract

Global warming is affecting everybody either directly or indirectly, molding people to become more alert and aware of the environmental effects to the mankind. Thus it have prompt issues such as environmental protection and sustainability to be the talk of the town and leading topic of interest to many. In the property sector, a new term such as green housing developments have emerged. Green housing developments are sustainable housing development with environmentally friendly and sustainable green features that ranges from design, construction and maintenance. It is believed that due to the competitive property market in Malaysia, many property developers have opted for production of sustainable property products to attract consumers. However current property market is indicating that overhang properties in Malaysia are on the rise. This is an indication of the struggle that property developers are going through to match consumer's current expectation and market needs. It is believed that approach to conventional marketing, need to be modified to attract consumers by matching their current needs and close sales. Particularly, this extensive study of literature materials has taken a pivotal task to enlighten readers with the following market confusions: (i) How green housing development is different from conventional housing development? (ii) Why green housing development will lead future property product demand? (iii) What are the changing marketing factors that will attract consumers to buy green housing development?

Keywords: Green Property Development, Green Housing Estate, Sustainable Development

Introduction

Global warming issues which include climate change and extreme CO_2 release to the environment, significantly impact quality of people's life worldwide, giving rise to the concept of green development, which became world renewed agenda to ensure sustainability of man's standard of living while preserving the nature from damages caused economic pursuit of rapid development. The environmentally concerned people of the planet now want to live in a place where it there is less impact to the environment, overall surrounding and as a bonus, their

residential area should have in built capability to further rehabilitation and contribute to the environment.
Environmental sustainability issues indirectly have forced corporations and marketers to mitigate, measure, disclose and reduce its impact and therefore indirectly challenging them to incorporate environmental issues into business activity and strategy that can generate revenue.

This paper seeks to answer the following pertinent questions arise, to further understand issues with regards to sustainable green housing development, particularly in the property fraternity of Malaysia:

How green housing development is different from conventional housing development?
Why green housing development will lead future property product demand?
What are the changing marketing factors that will attract consumers to buy green housing development?

This study tend to analyses deep down along the addressed line of thinking, to answer the doubts raised by the means of analyzing published literatures. It is hoped that this study will contribute new insight and understanding to the existing literature in the field of green marketing with regards to appreciating sustainable green housing developments.

How Green Housing Development is Different from Conventional Housing Development?
Properties with green living concept or green developments or green real estate development are sustainable housing development with sustainable features such as sustainable building design, construction, landscaping design, pioneering green materials, building maintenance operations, land site planning, project planning, and other elements which supposed to fulfill win-win social, economy and environmental condition (Zhang, 2015; Razak, Johari, Mahmud, Zubir, & Johan, 2018; Karimi & Eshaghi, 2018; Alkhatib, Abdul-Jabbar, Marimuthu, 2018)

Where conventional housing development is refers to houses, building or commercial building that do not have any sustainable green features. This type of property are the common products produced since historical time to present, where it just focuses on a basic building with necessary infrastructure for people to live in and or conduct commerce activity. This category of properties may consist of small pocket developments to huge townships developments.

Another widely used term is the green buildings, where it refers to a building with energy and resources saving capability, constructed using sustainable green material. The facilities are eventually managed with the benefits of saving resources and energy, which could be measured and eventually contributes to carbon reduction that are not detrimental to environment. Green building are usually consist of highrise buildings-residential, offices towers, shopping malls, halls, school building and etc. Green building are not sustainable green property developments. However a sustainable green property developments or townships, as it is known, may also become a host green building within it (Elias et al., 2015; Newell et al., 2008; Shen et al., 2017; Shazmin et al., 2016; Zhang et al., 2011; Zhang, 2015; Zhang et al., 2018).

This study of literature intents to list down some of the environmentally sustainable detail elements available in a green property development township. It is to be noted that the examples are derived from international LEED green building certification (Ahvenniemi, 2017; Welch, 2010). To narrow down the extensive material research, this study has selected few green housing products in Malaysia developed by key sustainable property developers who have won awards that recognize the company's contribution towards sustainable developments. Such prestigious awards include FIABCI Malaysia Property Awards and FABCI Prix d' Excellence Awards which acknowledges sustainability as its main agenda (Setia, 2018). The sustainability examples of elements and features are as follows:

Clearing and earthworks are carefully planned and executed to maintain the existing terrain, vegetation and water bodies and to minimize cutting to the existing environment. Residential products are usually built to suit the undulating terrain of the site so as to reduce ground cutting. Land clearing and earth cutting were planned and scheduled to minimize exposure of the ground to natural forces, such as rain and sun. This reduces soil erosion during construction and minimize disruption to the environment. Township products such as residential homes are arranged or allocated according to the reengineered terrain. During the earthworks, the top layer of good soil is preserved and kept for future landscaping usage. Large stones found during earthworks were collected and reused as landscape or decorative features in the landscaping of the parks within the development. Original trees are salvaged before or during earthworks, where it is transplanted to the parks within the development.

Natural waterways found at the original site are conserved by maintaining and upgrading them as engineered waterways and detention ponds according to the MASMA ("Manual Saliran Mesra Alam Malaysia") guidelines (Zakaria, 2004). Conventional monsoon drains are avoided and replaced with engineering waterways so that the drainage system will consist of detention ponds and waterways strategically positioned around the township, designed to ensure that pre- and post-development discharge is lesser or the same. Engineered waterways offer many advantages over the conventional monsoon drain because it is much safer because of its sloping banks, water can be naturally absorbed back into the soil to replenish the water table and it serves as a water feature that enhances the environment aesthetically and serves as a natural cooling system to the township. The engineered waterways operate in tandem with detention ponds, which contain and control the discharge of excess surface runoff during heavy rain. The waterways are also fitted with features that allow a gentler flow of water that reduces erosion, and beautify the township's water/lake attractions. During heavy rain, excess rainwater can be discharged in a controlled manner, thus protecting downstream areas from flooding. The banks of waterways which are landscaped to enhance the aesthetics of the township provide relief from heat; also serve as a natural barrier against encroachment, hence forming a natural security barrier which could replace conventional fencing.

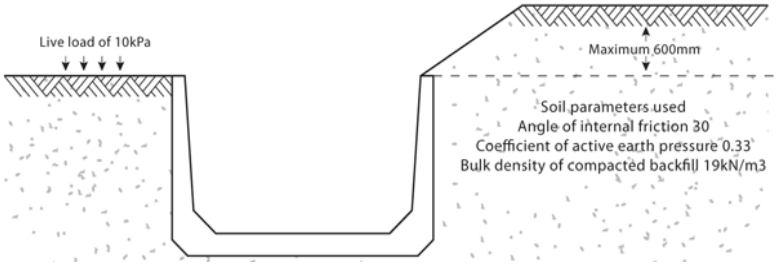


Figure 1: Conventional concrete monsoon drain
Source : SCIB (2017)

Figure 1 shows section drawings of a conventional concrete drain used in a non-green development. Rainwater are collected directly and channeled through the concrete drain to the nearby rivers and other drainage channels. Large volume of water need huge concrete drains to cater the flow and usually such drains, especially open ones (without covers), pose danger to people who risk falling down into the vertical concrete drop, accidently.

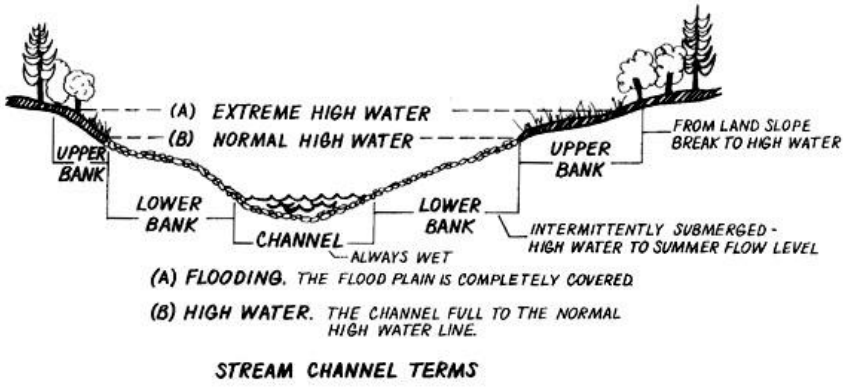


Figure 2**:** Engineering waterway cum detention pond
Source: FOA (1998)

Figure 2 is an upgrade version of drainage system shown in Figure 1, also known as the engineering waterways. Gradually sloping ground form a channel for rain water to flow within the township. Water level in the waterway will defer according the climate condition where during a very heavy rain, the water level will increase to point (A) “extreme high water level” to keep the water within the township before releasing it slowly to the surrounding outlets so that the surrounding areas or river do not get overloaded and flash flooding could be mitigated. The banks of the waterways are usually landscaped and turn into a green park with water body that will cool the township and encourage new flora and fauna to flourish within it. The water edges are usually planted with water plants that have the capability to bio-filter water so that it could be kept clean off any pollutants. Furthermore, water in the natural cannel could be absorbed directly into the ground compared to concrete base conventional drains where no water is absorbed back to the earth, and instead thrown directly to the rivers, which may cause flash flooding.

For instance, usually more than 10% of the total township is designated as park land, enabling healthy leisure activity, places for community gathering which also serve as habitats for indigenous wildlife. A landscaped park enhances the townships by breaking the monotony of brick and concrete, creating a cooling effect, where park users enjoy greater relief from heat and pollution, improved air quality and enhanced carbon absorption.

In addition, networks of integrated pedestrian and cycling paths are introduced all around the township to encourage cycling culture. All the amenities are located within a short distance from the residential areas to promote a walking and cycling culture. Usage of the walkways and cycling paths are encouraged by the safe and well-shaded canopy trees with landscaping. Pedestrian and cycling paths, actually reducing overall carbon footprint by reducing carbon emission when people cycle instead of using vehicle that burn energy to travel in the township. On top of reducing carbon footprint, walkways and cycling paths to promote a healthier lifestyle by increasing cardiovascular fitness and also improving joint mobility.

The houses within the township is mostly designed with a north-south orientation to help conserve energy. Houses are kept away from the direct path of the sun, resulting in cooler homes. Homes are also designed to adopt passive energy-conserving strategies by reducing energy consumption through maximizing the use of natural lighting and good airflow within the living space. Large and expansive windows takes advantage of Malaysia's year-round sun, allows abundance natural lights into the houses, reducing the need for artificial light and windows better air circulation promotes air ventilation when opened, reducing the need for air conditioner. Most of the houses within the township, adapts to open-plan layout to promote cross-ventilation of air into the living and dining room, as well as the kitchen, which are aligned to ensure maximum space and flow of air is ventilated from front to back of the home seamlessly. These homes are also designed with higher ceilings for a cooler home that enhances better ventilation to cool the interior space and with more space for warm air to rise; with cool air allowed to dominate the lower area. The green homes are also fitted with eco-friendly fittings such as rainwater harvesting system where collected and filtered rainwater can be safely used to flush toilets and irrigation, thus reducing consumption of treated water. Furthermore, solar hot water system are fitted into the homes where it can contribute up to 15% of a household's electricity consumption, thus shrinking a household's carbon footprint. Water efficient sanitary fittings such as water closets, basin taps and shower heads are used in these homes because it can reduce unnecessary water consumption by as much as 50% without sacrificing usual consumption performance.

In addition to the above, the terminology known as green street concept is utilized, where the streetscape is properly covered with all utility cables and pipes kept or laid underground, thus making way for a bigger green area or green spaces within the township. All street lights and garden lights in the common areas and roads are fitted with LED lighting which has a long lifespan of 40,000 to 50,000 hours (6 years), reduced power consumption as an LED circuit can approach up to 80% efficiency (80% light, 20% heat) and it does not contain environmentally dangerous substances or emit harmful infrared and ultraviolet radiation. Green development townships are also equipped with electric vehicle (EV) charging stations to enhance public interest to use

electric or hybrid cars. Furthermore, the electric car charging stations have become a must have element in a sustainable township, hence in line with the government's National Electric Mobility Blueprint to position Malaysia as an electric mobility marketplace. These housing developers also take pride in their township and conduct regular recycling campaign or programs, to allow residents who can dispose of their recyclables responsibly, responsibly.

Based on the above discussions and arguments, it is evident that the green housing developments are well thought off solutions that integrate environmental sustainability into our homes and living surroundings.

Why Green Housing Development will Lead Future Property Product Demand?

Studies have shown that Malaysia's consumers spend most of their income on housing compared to any other goods and services (Olanrewaju, Aziz, Tan, Tat, & Mine, 2016). This attribute could be assumed to the high cost of owning a home or Malaysian see property as one of the stable sector to invest, especially when considering long term investments. Property investments have always shown a positive gain in the Malaysia's real estate sector and its appreciation rate differs according to location and type of property invested.

In Malaysia MOF (2017) states that residential sub-sector continued to drive the overall market activity with 61.8% market share compared to other property sub sectors and 48.4% in value residential properties amounting to RM62.82bil. It also comprises of residential property volume of 47,501 transactions or 62.7% belonging to the residential subsector which makes up of RM16.95bil or 49.2% of the residential sub sector. Residential properties are the most transacted in term of volume and values, even in the down market. These fact and figures shows that the residential sub sector is the most competitive in the overall property market.

The statistics further shows that volume of transaction which increased a bit in 2014 has continuously dropping until 2017, however value of transacted property has shown a cost or value increase in 2017 despite the drop in volume (MOF, 2017). This trend actually explains buyers preference of selecting high quality property which they are willing to pay more for it (refer to Figure 3). This actually supports what Zairul, Ghani, Azriyati, Hanif, Sadat, and Tedong (2015) and Hussain, Tukiman, Zen and Shahli (2014) found that many housing developers are moving to build luxury to high end property that have key sustainable features which promotes lifestyle living in modern living conditions.

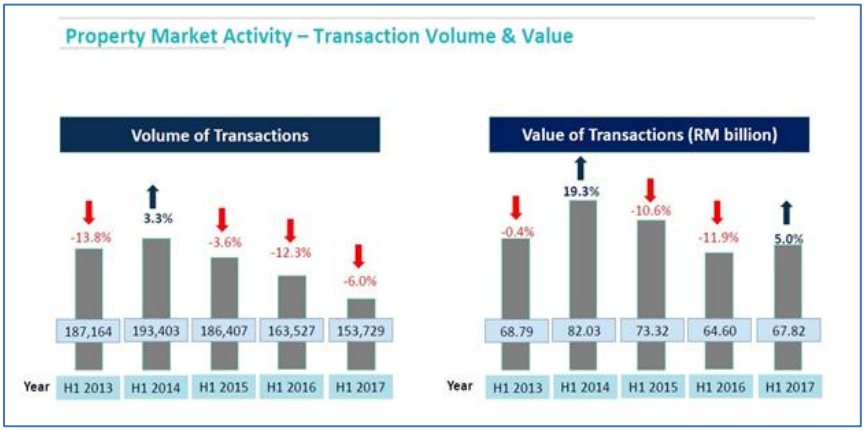
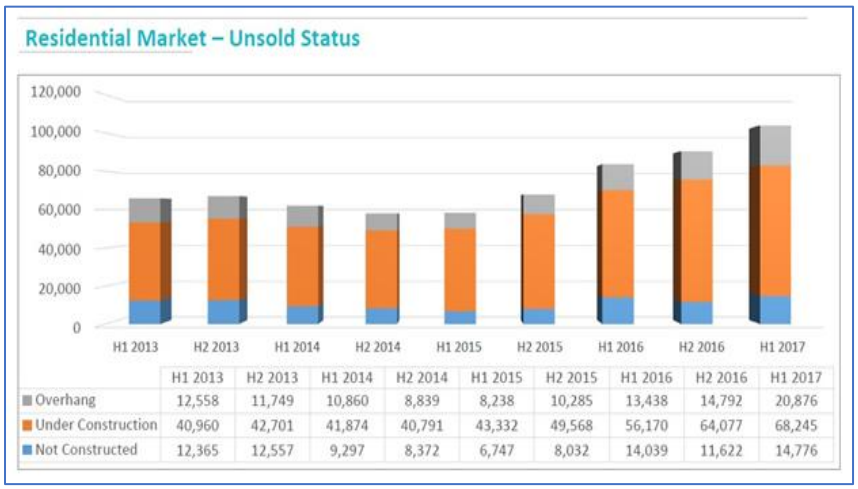


Figure 3: Residential property performances from 2013 to 2017
Source : MOF (2017)

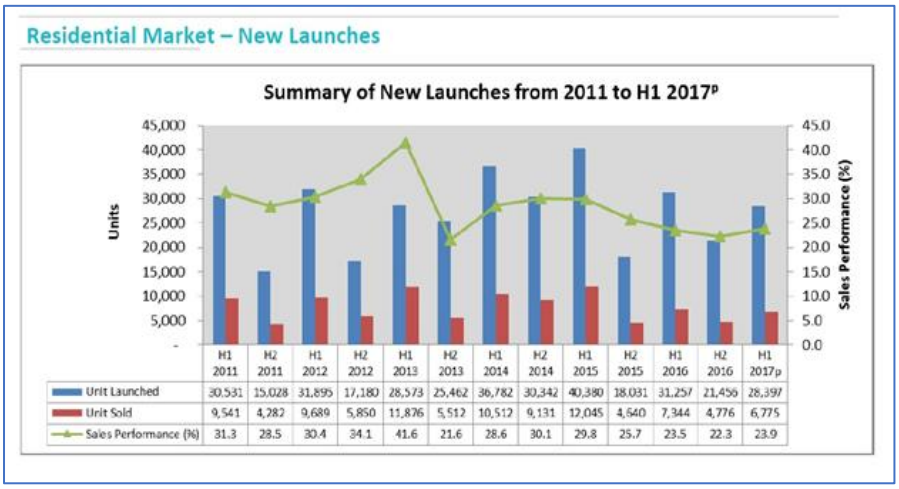
MOF (2017) statistics also emphasize the issues of residential property overhang that must be addressed by all parties such as local authorities and property developers where both must exercise due diligence before arriving at development decision to avoid oversupply situation (as shown in Figure 4). Assumption of property overhang is an indicative that the market is very competitive and consumers can pick and choose high quality products at a reasonable price. The issues of overhang properties also force housing developers to produce products that are different and attractive to consumers which gives rise to sustainable green development, so that sales could be captured in these difficult market conditions.

MOF (2017) have clearly stated that it expect the property market to remain soft in the next couple of years with residential sub-sector continue to drive the overall market although slow market absorption led to the increase in unsold residential homes to 20,867 units worth RM12.26 billion and the unsold volume and value raised by 40.0% against the preceding half of 2016 as per Figure 5. The property overhang issue further indicates that some of Malaysia's property developers have produced products that could not match current market needs. According to MOF (2017) report, most of the overhang properties consist of high-rise residential buildings such as apartments which are oversupplied in certain areas. We could summarise that green housing development are usually integrated townships which is built with various sustainable features in it. As the market slows down, and become more competitive, buyers are showing trend of abandoning conventional high-rise homes to buy landed residential homes which comes with better living quality and are mostly situated in the suburbs.



	H1 2013	H2 2013	H1 2014	H2 2014	H1 2015	H2 2015	H1 2016	H2 2016	H1 2017
Overhang	12,558	11,749	10,860	8,839	8,238	10,285	13,438	14,792	20,876
Under Construction	40,960	42,701	41,874	40,791	43,332	49,568	56,170	64,077	68,245
Not Constructed	12,365	12,557	9,297	8,372	6,747	8,032	14,039	11,622	14,776

Figure 4: Residential markets increasing unsold status from 2013 to 2017
Source : MOF (2017)



	H1 2011	H2 2011	H1 2012	H2 2012	H1 2013	H2 2013	H1 2014	H2 2014	H1 2015	H2 2015	H1 2016	H2 2016	H1 2017p
Unit Launched	30,531	15,028	31,895	17,180	28,573	25,462	36,782	30,342	40,380	18,031	31,257	21,456	28,397
Unit Sold	9,541	4,282	9,689	5,850	11,876	5,512	10,512	9,131	12,045	4,640	7,344	4,776	6,775
Sales Performance (%)	31.3	28.5	30.4	34.1	41.6	21.6	28.6	30.1	29.8	25.7	23.5	22.3	23.9

Figure 5: Residential market's new launches sold and unsold comparison from 2011 to 2017
Source : MOF (2017)

These supports what Zhang (2015) had said about competitive property market, a new concept of green property development which contains sustainable elements such as landscape design, innovative green building materials, property or common area maintenance, operation and future maintenance.

Based on the above discussions and arguments, it is predictable that the green property development will remain high in demand and will lead future property market trends in Malaysia. Property developers will continue to produce enhanced innovative sustainable products to compete and survive in the difficult market conditions as sustainability remains appealing to current and future consumers.

What are the Changing Marketing Factors that will Attract Consumers to Buy Green Housing Development?

According to Newell and Manaf (2008) the language of sustainability becomes an essential part in Malaysia's property industry with environmental protection terms are used in strategic property planning's and annual reports. Moreover, it is understood that consumers with high environmental consciousness disclose a greater intention to buy products with environmental claims (Lin and Hsu, 2015). Although consumers spending efforts toward sustainability should be moderate (Quoquab and Mohammad, 2016), spending for housing falls under the category of necessity for living which consumers generally would be willing to pay more especially if the product purchased fulfil their needs towards preserving the environment.

As environmentally conscious consumers increase due to the degrading environmental issues in the world, marketers have to re strategize and redesign their product to suite the changing market needs. The environmental friendly concept is still new in Malaysia especially where it concerns the knowledge on consumer's attitude towards green products (Nezakati and Hosseinpour, 2015). Due to the competitive residential property industry, property marketers have been using the term, sustainable green living environment to market their products. While Abdul-Ghani et al. (2015) found that increase in housing demands have motivated housing developers to create neighborhoods with green living concepts to the extent that they are willing to use artificial attributes which are originally not available to attract customer to buy from them.

According to research done by Portnov et al. (2018), potential homebuyers with lower familiarity of green building notion were only willing to pay lesser compared to those with higher level of green building familiarity. However Portnov et al. (2018) found that deliberations for green building buying are not completely based on economic coherent. Their analysis indicate that maintenance savings are one of the most substantial factor that positively connected with acceptable dimension of premium paid for green building.

The green marketing strategies, particularly in Malaysia, are adopted from western countries due to lack of marketers experience on green marketing and green consumers purchase behaviour (Lasuin and Ching, 2014). Property prices in an advanced country like Singapore, indicate that green homes values are seen to appreciate during the sub sale period when the real green elements put in place started benefits or fruiting in the development (Deng and Wu, 2014). Review of literature suggest that regardless of these, green property projects cost more than conventional properties due to the green elements it offers (Zhang et al., 2011).

Consumers in general whether they have experienced or had not experienced any green homes are willing to pay more green homes with features that enhance various environmental performances. For those who have lived and experienced living in a green property development, their next future property purchase or investment will definitely be to embrace green living development and they are more than willing to pay a premium for it (Chau, Tse, and Chung, 2010).

Not all housing developments in Malaysia that claims to be a sustainable green development, offers real green features that enhances the environment. Research have found that consumers with less environmental knowledge actually tend to overestimate the true value of a housing development's by falling for its beautiful landscaping features because landscaping is highly perceived as an iconic feature for a green development (Chau et al., 2010). Many housing developers are actually taking advantage of extensive landscaping and enhancement of various landscape features to market their product as sustainable green development. In the recent years, many housing developers spend luxuriously on landscaping features and use it as their unique selling points in their marketing materials and their sales pitch were focused on extensive landscaping have successfully brought higher sales of residential homes.

Property development with green development features are well thought off holistic sustainable solutions that cost more to build, hence price per products is generally higher compared to conventional housing developments. Since consumers knowledge on green property development and its elements are rather low, housing developers found a great shortcut opportunity by using extensive landscaping to label their product as sustainable and make quick high profits because it is cheaper to plant extra trees and shrubs compared to providing the actual sustainable green feature that actually contribute to the environmental enhancement where purchasers can enjoy in future. These act of masquerading or misleading consumers in the marketing materials are known as greenwashing (Chen and Chang, 2013). There is a notion that unintentional greenwashing happens when a company is over attracted by actions which might improve its products environmental impact, that it does not correctly evaluate the overall environmental impact of the product itself (Dangelico and Vocalelli, 2017). Question still remains in the Malaysia's property market whether what the property developers are doing is 'unintentional greenwashing' or otherwise, which this study will leave it to the relevant consumers associations and government enforcement agency to analyse and resolve.

Despite all these efforts, the act of concealing with landscaping on a non-green development product and claiming it to be a green product in property development marketing materials, are surely known as greenwashing. It is possible that greenwashing maybe rampant Malaysia's property marketing materials and it is possible due to lack of consumers knowledge on green development features. Studies have shown that once consumers have gained the proper knowledge and experience on a green property developments, a change of behavior was observed where consumers are less concerned about extensive landscaping of a housing development, when considering repeat purchase of residential homes (Chau et al., 2010).

Understanding of consumers preferences on various aspects of green development's environmental performance is vital for raising demands for true green developments. A deeper understanding of end-user demands is valuable for marketers so that they can divert their major attention to specific areas which could influence end-users preferences in their resources allocation and pursuit of sustainability excellence (Chau et al., 2010). Furthermore, marketers of green housing developments should optimize these findings by strategizing their marketing materials to educate the true value of green development features which will benefit the

consumers in the long run. Marketing material with enhanced educative information's on green features offered in their sustainable developments, will eventually lead to an eye opening experience to consumers, hence it might possibly change their behavior to purchase green homes in a sustainable development which would understandably cost more compared to conventional housing developments. This act of educating consumers in marketing materials will eventually help to eliminate marketers who practice green washing and wipe out the imposter company which is competing with the true green players. Moreover it is understood that consumers attitude plays a major role in influencing the consumers green purchase intention and it can be enhanced by creating awareness in the society, where it may create a favourable image of the green products among the consumers (Yadav and Pathak, 2017).

Thus, it could be concluded that environmental sustainability is a trend that is here to stay and rapidly growing. Hence designing, developing, and marketing a new product, marketers have to consider sustainability as one of the key element (Dangelico and Vocalelli, 2017). Hence the way property developers market their products, will indirectly form a new trending market equilibrium, shaped according to consumers' current needs and their ever changing behavior.

Conclusion

The main objective of this study is to shed some lights on the different between green property developments and conventional non green property development. Vast samples of features were churn out for readers to understand sustainable development. Attempt has been made to highlight the importance of the sustainable green development which are expected to lead the current and future market. A cursory review of literature had also revealed that marketing of the green housing developments need to undergo innovation to reach out, educate and attract consumers. Moreover, it is understood that the element of green washing is prevalent in the industry. This study concludes by highlighting the importance of understanding consumer's behavior towards environment and sustainability, which provides the platform for other researcher to produce more in depth understanding and study of green property developments. It is hoped that, future researchers will carry out more research on sustainable housing development in Malaysia. This is because of the notion that proper statistics and divisions of this particular sector is still infant. Moreover, the awareness level of consumers on sustainable development is still low in Malaysia. Thus, further study calls for consideration of more research on consumer's pro environmental behavior towards owning a green property.

As a related contribution, this study exposes portion of opportunity still unstudied in the field of green marketing especially for the property industry in Malaysia. Therefore it brightens up existing literature and further exposes opportunity to set green property development as a sustainable feature to care and protect the environment. In doing so, marketers in particular property development companies in Malaysia could take head and utilize green property development not only specific to environmental sustainability, but potentially responding to the changing consumer behavior by securing sales and increasing revenue from churning out sustainable green homes. This research covers both technical and marketing aspect of

sustainable green homes. Therefore, to pursue such research opportunities, we further challenge researchers to increase knowledge, reach and command in the field of green marketing.

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