

Review of Green Building Demand Factors for Malaysia

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Abstract

Green building is redefining building practice and Malaysia is poised for early adoption in recognition of the potential economic and environmental benefits that accrue to it. Available reports tend towards the fact that there will be increase in demand for green buildings with the growth in environmental awareness and increase in corporate social responsibility among the companies as well as growing body of evidence demonstrating that green buildings make financial sense. Despite the growing interest, risks of uncertainties still cloud investment in green building. This paper examines Malaysia efforts to spur green building investment and demand with particular focus on Green Building Index (GBI) and the enabling green tax incentives. Subsequently the paper reviews potential factors that enhance green building in Malaysia as well as the underlying challenges and barriers. Based on the review, we can infer that the Malaysia green tax incentives for obtaining GBI certification are significant but not outstanding. They are inherent with notable criticisms and may not be sufficiently attractive to potential real estate investors. The review also empower us to hypothesize that the model of green building demand for Malaysia will comprise seven interrelated factors vis-a-vis:- quest for environmental sustainability, quest for increased productivity, quest for improved internal building conditions, quest for higher building value, quest for cost savings, quest for lower risks, and quest for branding and prestige. And that the nature and strength of relationship among the factors will be moderated by some of the challenges and barriers identified in the review. The paper will be useful to researchers, practitioners and policy makers in real estate development and market seeking explanations for factors that could enhance demand for green building in Malaysia.

Keywords: green building, green building demand, green building index, green building barriers, green building benefits.

1. Introduction

Green Buildings are referred to as those that are capable of reducing the negative effects of real estate development on the environment and human health with the aim of promoting sustainable life (Addae-Dapaah et al, 2009). Put differently, green building could be referred to as that that its lifetime of operation and construction “assure the healthiest possible environment while representing the most efficient and least disruptive use of land, water, energy and resources” (Zeigler, 2012). Green Building is redefining and revolutionizing building practice and emerging as a response to growing concern over pollution and environmental damage, increasing awareness and acceptance of climate change, decreasing natural resources, increasing energy cost, and increasing demand for sustainability in building design and construction. More so, buildings have been particularly implicated as major culprits to problem and essential path to the solution. Studies have not only revealed that buildings account for about 38%-50% of the greenhouse gas emissions, and one-third of the world’s total energy is being consumed in the built environment, it has also confirmed that enhanced green building demand and supply could contribute to - 35% reduction of carbon dioxide (CO₂) emissions; 30-50% reduction of total energy use; 70% savings on waste output; and 40% reduction of water usage (USGBC, 2003; CBRE, 2010).

Green rating tools for evaluating and measuring the environmental performance of a building have been gaining global popularity. Consequently, a plethora of green rating systems with different rating criteria have emerged and popular among them are the US Leadership in Energy and Environmental Design (LEED), UK Building Research Environmental Assessment Method (BREEAM), Singapore’s BCA Green Mark and Australia NABERS rating system.

Malaysia has developed its own local rating system known as Green Building Index (GBI) for evaluating the environmental design and performance of Malaysian buildings. The GBI rating system was developed jointly by the Association of Consulting Engineers Malaysia (ACEM) and the Malaysian Institute of Architects (CBRE, 2010). The objective of GBI is to save energy, resources, recycle materials and adapt buildings to the Malaysia

climate, culture and environment. The rating of buildings based on GBI is centred on six major areas vis-a-vis indoor environment quality, energy efficiency, materials and resources, sustainable site planning and management, water efficiency, and innovation. Essentially the Malaysian Green Building Index is aimed at establishing a common language and standard of measurement; promote integrated whole-building design; recognize and reward environmental leadership; ensure that new buildings remain relevant in the future and existing buildings are refurbished and upgraded properly (Darus et al, 2009, GBI. 2010; Baharuddin, et al., 2011) In addition to GBI, green buildings are being subjected to two other rating systems in Malaysia. They are the United States Green Building Council's Leadership in Energy and Environment Design (US LEED) of 1998 and Singapore's BCA Green Mark launched in January, 2005.

There has been substantial increase in the rate of submissions of applications for GBI certification and the actual number of certified. In the first year of GBI in 2009 when it was first launched, 55 submissions were received by GBI committee but only one building was certified. In the fourth year in 2012, GBI committee received 121 submissions and certified 68 buildings. While as at June 2013 the committee has received over 450 applications for registration and certified 137 buildings or 30% of the submissions. Thus far, the GBI has certified over 60 million square feet of green buildings. On annual average, this translates to a total of CO₂ emission reduction of 224,435 tonnes (Hamid, 2013). It was observed that at the second year of GBI about half of the GBI certifications in Malaysia were residential buildings (CBRE, 2010). However, CBRE (2010) noted that GBI requirements for Malaysia building development are less stringent than those in some other countries.

A major instrument the government has applied to foster green building investment and adoption among public and private sectors in Malaysia is the introduction of series of green tax exemptions and reductions, and investment incentives. Notable among the tax incentives are: 1) corporate tax incentives for companies generating and conserving renewable energy using biomass, hydropower and solar power. This is given either in form of ten years 100% statutory income tax exemption for companies granted pioneer status or as five years investment tax allowance on qualifying capital expenditure on green certification. It also include import duty and sales tax exemption on equipment used to generate energy from renewable sources not produced locally and sales tax exemption on equipment purchased from local manufactures; 2) company tax incentives for generation of renewable energy for own consumption. This involves investment tax allowance on qualifying capital expenditure incurred in the process of GBI certification; 3) corporate tax incentives for companies providing efficient energy conservation services. Similarly, this is given in the form of 100% statutory income tax exemption for ten years or as investment tax allowance on qualifying capital expenditure on GBI certification. In the same token companies which incur capital expenditure for energy conservation for own consumption receive investment tax allowance on qualifying capital expenditure on GBI certification; 4) Income tax/stamp duty incentives for buildings that obtain GBI Certificate. This covers tax exemption on additional capital expenditure incurred by a person or company to obtain GBI certificate; and stamp duty exemption on instruments of transfer of ownership for property buyers in which the exemption amount is equivalent to the additional cost to obtain GBI certificate (PwC, 2010).

Nevertheless a number of criticisms have been levelled on GBI tax incentives. Among the dissatisfaction are: 1) on qualifying expenditure - it has been conceived that incidental cost such as GBI registration fees, GBI facilitator cost and consultancy cost are not included as additional capital expenditure incurred to obtain the GBI certification; 2) on qualifying person - only a person who incurs qualifying expenditure and commences his business at GBI building would qualify for GBI income tax incentives. Thus, property developers, private house owners who lease GBI residential properties to collect passive income and first property buyers would not qualify for GBI income tax; 3) the GBI income incentives and stamp duty exemption is standard and not enhanced if the GBI certified building attains higher category, such as from silver to platinum category; 4) lack of clarity and details on qualifying expenditure as to what constitutes reference base cost for green asserts as some green asserts were given reference base cost while others were not; and 5) generally the current tax incentives for green technology in Malaysia may not be sufficiently attractive to the public and private sectors as compared to those given by neighbouring countries (PwC 2010). Moreover, participation in GBI is generally voluntary for existing and new buildings, private and public building. There is no element of mandatory clause or regulation making it mandatory for some class of new building to achieve at least the minimum certified level of GBI rating or a mandatory regulation setting a realistic target such as 2025 for some class of existing public buildings to undergo major retrofitting to at last to either certified or silver GBI rating level.

It is note worthy that in addition Green Building Index; the government of Malaysia has taken some other important measures to encourage green building such as the enactment of National Green Technology Policy, establishment of Malaysia Green Building Confederation (MGBC) to facilitate of green building initiatives,

and National Green Technology Council. The government has demonstrated its commitment and leadership by turning four of its iconic buildings into green buildings. - Kuala Lumpur Securities Commission building, the Diamond Building, Putrajaya, Green Technology and Water, Building (LOE Energy Office Building GreenTech Malaysia).

Despite the growing interest green building and government incentives, risks of uncertainties still cloud investment in green building. Anthony Tan cautioned in Bernama Newspapers that developing demand for green products is not easy and more often than not, there would be misleading claims that may be deceiving to the consumers (BERNAMA, 23 June 2010). Similarly, in MIS Asia, CS Tan warned Malaysia Building developers to take some time to step back and reflect on green building market before they go ahead and start building (MIS Asia, 05 May, 2009). As Eichholtz et al (2009) argue, both real estate developers and institutional investors are understandably uncertain about how far to go in green building investments, since the economic rationale for the development of sustainable buildings is based almost entirely on anecdotal evidence.

2. Green Building Demand Factors

2.1 *Quest for Environmental Sustainability*

Theories of pro-environmental behaviour in particular those related to resources conservation in building such as the value-belief-norm (VBN) theory acknowledge that both general altruistic norms rooted self-transcendent values that translate feeling of collective ownership of environmental welfare and personal moral norm anchored on in self-enhancement or individual self-serving interests play important role in green consumption (Aliagha and Cin, 2013). As building sustainability gathers momentum in conjunction with growing environmental awareness and consciousness there are signs that Malaysian office workers, tenants and prospective new home buyers are developing pro-environmental beliefs that may be attributed to altruistic or personal moral norms and values. Some may be buying green building not only because it saves energy and money, but because of their altruistic belief that climate change and its effects on man and the environment are real and they can act to reduce these effects. If altruistic norms and personal moral norms permeate deep into Malaysia green consumerism, sustainability will be front and centre issues not only for those looking for new housing or office space but also for those renovating and retrofitting their building. Invariably this will increase demand for green building.

Since the methods of construction in green buildings are carried out to reduce the impact on the environment, then green buildings are constructed to reduce the amount of used water that is released into the environment through recycling method of about 35-40% annually (Alias et al, 2010). Experts had advised that the risk to the environment, society and economy must be minimized in short and long term to achieve a sustainable future. The resources being consumed must be considerably reduced to achieve a sustainable environment. However, the construction industry is a major consumer of these resources (Boyle, 2004). The general practices of green building could have a major impact in addressing the issues around climate change and assist in achieving sustainable future environment.

2.2 *Quest for Increased Productivity*

Most competitive businesses understand the strong relationship between employee productivity and their return on investment and thus go beyond financial and economic measures to look for work environment that maximize workers' productivity. To this end it has been established that there is a strong link between physical office environment, behavioural environment also known as environmental perception and productivity (Haynes, 2007). Green Building is characteristically a high performance productivity environment when one incorporates three of Haynes (2007) physical and behavioural environment determinants of office productivity vis-à-vis: 1) environmental services (ventilation, heating, natural lighting, artificial lighting); 2) physical layout; and 3) overall comfort. This is linkable to the fact that high performance green building with proper building orientation, incorporate passive wall, roof, floor design and insulation as well as window glazing insulation that allows passive cooling and natural energy flows to maintain the building's thermal comfort while reducing the need for mechanical cooling or heating. These consequently eliminate or reduce carbon footprints in building which generally make green buildings healthier than conventional buildings. As Miller, et al. (2009) observed the inherent natural light natural lighting, good ventilation, the absence of organic compounds as well as availability of localized appropriate temperature controls in green buildings provides happier, healthier workers. A corollary to these is enhanced employees recruitment, retention, less sick time and sick leave.

It is on these accounts that numerous studies have strongly linked green building to enhanced work productivity. A Study based on sick leave records in Australia to track before and after sick days after the firms moved to a 5

green star rated refurbished building found sick days per employee per month reduced by 39%. The change alone significantly reduced the average monthly cost of sick leave. As a result, staff were more productive as sick leave fell (Dunckley 2009). Kats et al (2003) found out that green office building increases the productivity of workers and that the organization would benefit with an increase of production from \$37 to \$55 US Dollars per square foot. Armitage et al (2011) reported that the employers of labour have strong believe that the green office would have positive impact on health of the workers and consequently on the productivity of the organisation. Kats et al (2003) reported that ‘Herman-Miller showed up to a 7% increase in worker productivity following a move to a green daylight facility’. They also reported that ‘a Lawrence Berkeley National Laboratory study found that U.S businesses could save as much as \$58billion in lost sick time and additional \$200billion in worker performance if improvements were made to indoor air quality’.

2.3 Quest for Improved Internal Building Conditions

In a study conducted by Gou et al (2013) in China, it was concluded that the occupants of the “green buildings are more satisfied with thermal comfort and air quality in their workspace while they are less satisfied with lighting and acoustic quality”. Also that the “green building users tend to be more tolerant of their ambient environments than non-green building users, which means that the dissatisfaction with one or more aspects of the indoor environment does not necessarily produce dissatisfaction with the environment overall”. According to Kumar and Fisk (2002), several studies have been carried out on the effects of indoor environmental quality (IEQ) on health, comfort and performance of occupants. While the effects of IEQ on the occupants’ well beings have become essentially important and they have been considered something of interest to the property managers while they are also concerned with the energy use. They concluded that the employers are looking forward to satisfy their workers by creating comfort to enhance productivity, reduce absenteeism and health related costs, and reduce the risk of litigation. According to Kumar and Fisk (2002), the adoption of green buildings could help improve productivity gains that valued between \$6 billion and \$14 billion annually by reduction in the cost of treating ARIs and the potential economic gains are \$1 billion to \$4 billion for IEQ for allergies and asthma. A study conducted in Malaysia by Syazwan et al (2009) concluded that there will be considerably reduction in the sick building syndrome (SBS) when the ventilation rates per person among typical office buildings increases. Green homes use low volatile organic compound paint with reduction in health related problems and this provides better indoor air quality compare to the conventional homes (Alias et al, 2010).

2.4 Quest for Higher Building Value

In another study carried out by Halim (2012), it was concluded that green office building commands higher rental rates in Malaysia which is around RM0.50 – RM2.25 per square feet while operating cost saving is around RM0.164 per square feet. Also, Australia and United States studies “have found that developing green buildings can help landlords achieve higher values, fetch higher rents and enjoy higher occupancy rates than comparable non-green buildings” (Chong, 2010). A survey was conducted in America involving 718 executives in architecture, construction, Real Estate consulting, corporate owner-occupants, developers, engineers, real estate owners, corporate tenants and real estate service providers on the adoption of sustainable buildings. They pointed out that energy efficiency, operations and maintenance costs, and building value as the primary reasons for incorporating green features into a construction project (Yaron and Noel, 2013). According to Green Building Council of South Africa, the past studies have proved this assertion on the green buildings for Australia and United States with 12% and 11% valuation premiums, respectively. Bertrand (2010) said that the most future buyers in Malaysia are ready to pay at least 5% more for green properties due to the quality, comfort, environmental friendliness, increase in productivity due to natural lighting and that it helps healing fast. According to Bertrand, the average costs for green buildings and non-green buildings in United States are not significantly different.

2.5 Quest for Cost Savings

There is reasonable body of evidence that previous finding that green building results to higher costs may have been based on outdated information and poor green building skill and practices. Good life cycle assessment, integrated building design, effective commissioning, operation and maintenance complement to guarantee continuous cost savings. In this regard lack of knowledge of life-cycle costing and analysis that take into account not only design and construction costs, but also long-term operations such as maintenance, repair, replacement costs in decisions and procurements of equipments is very likely translate to higher building cost. The reverse would likely be the case when there is skilled knowledge of life-cycle costing and analysis. A study in neighbour country, Singapore reveal that green buildings save approximately 10 percent in operating cost, and green commercial buildings increase in market value by about two percent. The average savings from a sample of 23 retrofitted buildings (comprising office, retail, hotel, and mixed-used developments) was about 17 per cent of the

total building's energy consumption, compared to before retrofitting (Uma, 2011). Bertrand (2010) studied on the benefits of green building construction to the real estate developers and found out that the “developers can effectively reduce their costs and risks in achieving green building accreditation. Similarly, Kats et al (2003) reported that the California State owned Education Headquarters Building which was LEED Gold certified was saving the taxpayers \$500,000 a year in energy costs alone. Morris (2007) was of the opinion that the materials for green building construction are becoming cheaper and that the design is gaining wider acceptability while the tenants and house owners are demanding for green buildings and having value for those features. The earlier study concluded that Green Star certification buildings in South Africa benefit from the energy savings of between 25% and 50% in comparison with the buildings designed to other building standards. Then the report also concluded that “the payback periods of energy and water saving practices are becoming much shorter as a result of increasing utility costs and the wider availability of more affordable green building technology” (Green Building Council SA, 2013).

2.6 Quest for Lower Risks

Cannon and Vyas (2008 cited in Addae-Dapaah et al, 2009) concluded that lower risk of exposure to volatility in price and resource availability, should logically result in lower capitalization and discount rates. In a survey conducted in Sweden and Netherlands, sixty-seven per cent of the “respondents agreed (partly) that tenants prioritize environmentally friendly buildings when looking for new space” (Kuiken, 2009). This shows that there is awareness for environmental friendly buildings and the tenants are becoming more aware of the financial benefits and ethical responsibility (ibid). Fifty-four per cent of the respondents did not agree with the notion that vacancy rate is lower for green buildings in both Sweden and the Netherlands in contrast with the research carried out in USA by Eichholz, Kok and Quigley (2008, cited in Kuiken, 2009) where the outcome showed that there is less vacancy loss for green buildings. Kuiken (2009) later concluded that the outcome may be due to the fact that the stock of green real estate and a certification that has been used for a longer period of time in USA. Kuiken (2009) also concluded from the study carried out in Sweden and Netherlands that “the reduction in market risk is greater than the increase in default risk”. In summary, since reviewing leases in environmental buildings is easier from the survey by Kuiken (2009), then the vacancy rate is lower and thereby makes the green buildings a less risky and commands higher value investment.

2.7 Quest for Branding and Prestige

A study carried out in Australia by Kato et al (2009) concluded that the building managers are happy for being Green Star-rated office building which gave them a competitive advantages as a sustainable leader in the industry. The respondents in the study carried out by Kuiken (2009) believed that the factors that determine the value of a property would be available for green buildings positively in the next five to ten years. According to him, “a rent premium, lower vacancy allowance, decreasing risk and slower depreciation are all in favour of a price premium for green buildings”. Since the operating costs of buildings are already lower for green property, then one could agree that an increasing demand for green buildings is expected in both the Netherlands and Sweden (ibid). The report from the Green Building Council of South Africa stated that “green building creates a distinct product in the market which is viewed as technologically advanced and environmentally and socially responsible”. Therefore, all these attributes have positive impact on the organization brand and on the image of the building owner including the tenant of green buildings.

2.8 Quest for High Workforce Turnover

In a study carried out in Australia, Kato et al (2009) concluded that those who occupy the Green Star-certified properties were highly satisfied generally and they are proud of their green working areas. The occupants were stronger psychologically as benefits they derived from green buildings than the real physical benefits for them to work in the green office. The Green Building Council SA stated that since the experienced members of staff are difficult to attract and retain, therefore the younger ones that are now conscious of sustainability and health related issues could well be motivated with working in a green environment.

3. Barriers to Green Building Demand

The demand for green buildings, both commercial and residential, must come with some problems and challenges in different countries and regions while moving towards sustainable construction development.

A study carried out in Malaysia by Samari et al (2013) showed that the main barriers to the development of green buildings in the country are risk of investment, lack of credit resources to cover up front cost, higher final price and lack of demand. Others barriers are lack of incentives, lack of building codes and regulation, higher

investment cost, lack of strategy to promote green building, lack of public awareness, lack of design and construction team, lack of expertise, lack of professional knowledge, lack of database and information, lack of government support and lack of technology. Zainul Abidin et al (2012) also listed the some of the hindrances to faster progress of Green Housing in Malaysia as lack of public interest and demand, the status quo in rules and regulation, organization disinterest, project cost escalation and local authority enforcement. Momentum

Having realised that the reduction in the energy consumption in the buildings is a major cost-effective way of reducing greenhouse gas emissions, a study was carried out in Australia in five largest cities by population to identify the barriers to energy efficiency in households. It was concluded that the initial costs of sustainable features, a lack of consumer information about benefits and savings from incorporating energy-efficient devices and larger homes and smaller households are the identified barriers to energy efficiency in households in Australia. Also, the laziness or inconveniences is the most common reason people are not acting in more sustainable way (Bond, 2011). Another study carried out in England identified twelve barriers to achieving sustainability to development schemes through qualitative research on five completed projects (Williams and Dair, 2006). Therefore, some of the barriers identified by the stakeholders in the projects are lack of considerable sustainable measures, real and perceive costs and inadequate expertise and powers. A related research was also conducted in China by Zhang et al (2011) to examine ten typical barriers being experienced during the development of real estate and facilities management through the use of questionnaire survey. They found out that the high cost for green appliance and lack of motivation from customers' demand are the two distinct barriers to developing green building.

The primary barriers in the development of sustainable buildings are identified as the lack of interest or demand by the clients in sustainable buildings, lack of education and training in sustainable design and construction, "failure of service fee structures to account for the recovery of long-term savings, and the higher costs of sustainable building options" (Landman, 1999). Other barriers affecting the development of green buildings are lack of education, awareness and understanding of the sustainable property development by the people (Perrett, 2011). Bilau (2008) discussed the challenges facing the implementation of green building industry generally and listed them as: lack of integrated design, low level of education, people's resistance to change, limited post occupancy evaluation, greening existing buildings, lack of transit oriented development, separate capital and operating budgets and split incentives for owner-tenant.

The increase maintenance cost and lack of promotion and incentives from governments are identified as the top barriers to the implementation of extensive green roof features in Hong Kong (Zhang et al, 2012). The other identified barriers by Zhang et al (2012) are lack of incentive from the government towards developers, increase of maintenance cost, technical difficulty during the design and construction process, increase of design and construction cost, the old age of existing building, the weak affordability of extensive roof to withstand wind load, weak structural loading for applying extensive green roof system, poor utilities arrangement, and lack of awareness on extensive green roof system in public and private sectors.

Bilau (2008) discussed the challenges facing the implementation of green building industry generally and listed them as: lack of integrated design, low level of education, people's resistance to change, greening existing buildings, limited post occupancy evaluation, lack of transit oriented development, split incentives for owner-tenant and separate capital and operating budgets. Zainul Abidin et al (2012) also listed the some of the hindrances to faster progress of Green Housing in Malaysia as lack of public interest and demand, the status quo in rules and regulation, local authority enforcement, organization disinterest and project cost escalation. After a comprehensive literature review by Wai et al (2012), they found out 31 critical success factors for the sustainable building in Malaysia. They concluded that the following five factors are crucial to ensuring success of sustainable building development in Malaysia: effective monitoring and control, realistic schedule, well allocation of resources, understanding of project objectives and ability to solve problems.

4. Conclusion

This paper looks at Malaysia efforts to spur green building investment and demand with particular focus on Green Building Index (GBI) and the enabling green tax incentives. Subsequently the paper reviews potential factors that could enhance green building demand in Malaysia as well as the underlining challenges and barriers. There is observable evidence that green building is gathering momentum in Malaysia with the introduction of Green Building Index (GBI) but is still far from entering main stream and still largely driven by the public sector. The private sector property developers and investors have not really made bold and substantial commitment to green building probably not because they are uncertain about the benefits but possibly because the Malaysia

green tax incentives for obtaining GBI certification are not robustly market driven and sufficiently attractive. The incentives are still clouded with notable criticisms principally in the areas of qualifying expenditure, qualifying person, standardisation of GBI income incentives and stamp duty exemption, lack of clarity, and insufficiently attractive for investors. More so, Malaysia green tax incentives may be said to be unbalanced as it is more pro supply side green technology investment but has little for sensitizing demand side green building purchasing. Moreover, participation GBI is generally voluntary for existing and new buildings, private and public building. It recommended that some elements of mandatory clause or regulation be introduced making it mandatory for some class of new building to achieve at least the minimum certified level of GBI rating or a mandatory regulation setting a realistic target such as 2025 for some class of existing public buildings to undergo major retrofitting at last to either certified or silver GBI rating level.

Our reviews of past literature on potential factors that enhance green building demand has allows us to hypothesize that the model of green building demand for Malaysia will comprise seven interrelated factors vis-a-vis:- quest for environmental sustainability, quest for increased productivity, quest for improved internal building conditions, quest for higher building value, quest for cost savings, quest for lower risks, and quest for branding and prestige. And that the nature and strength of relationship among the factors will be moderated by some of the challenges and barriers identified in the review including the robustness of green tax incentives.

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