

# Investigating Housing Affordability Pursuant to Sustainable Development Mechanisms and the New Malaysian Housing Policy

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## Abstract

**Purpose** – This paper will assess housing affordability and the Malaysian vision 2020 mission of attaining a fully developed nation status via sustainable development mechanisms in the new Malaysian housing policy plan. **Methodology/Design/Approach** – This is a policy analysis paper which sieve ideas from housing policy and sustainable developments. It equally draws criteria which shall be used as an interim assessment of the policy proposals and programmes. **Findings** - The plan contains new policy directions, strategies and programmes that shall enable the country to emerge as a high-income nation. The development programmes were tuned to the six National Key Results Areas, outlined in the Government Transformation Programme, the National Key Economic programme Areas of the Economic Transformation Programme and the strategic economic reforms in the New Economic Model. The Plan details strategies towards a more focused role for the Government as a regulator and a catalyst while upholding the principles of 1 Malaysia: People First, Performance Now to ensure effective delivery of service. **Originality/Value** – This paper suggest a substantial and assessment of Malaysian new housing policy strategies and programmes. The subject matter relates to the national housing policies, systems and strategies set to ameliorate the impact of house deficit and forge the need for more affordable housing stock.

**Keywords** Malaysia, Housing policy, Housing affordability, Sustainability indicators and mechanisms

## 1. Introduction

Malaysian housing programs have focused largely on the eradication of poverty and restructuring of society through integration of the various ethnic communities. The government has provided a settlement policy to keep pace with Malaysia's rapid economic growth "to eradicate hard-core poverty, to bring a better quality life to her people and to conserve her forest eco-system for future generations (*Malaysia 2020, 1988*). As such, the role of private sector developers became more significant and resulted in the formation of a consultative committee on housing and construction between public and private sectors. Over the last three decades, the scope of development prospects undertaken by developers has increased from encompassing traditional housing projects to condominiums, townships, towering commercial complexes, shopping malls, state-of-the art golf courses, hospitals, theme parks and industrial estates. As the population increased, housing programs in urban areas were further accelerated with Vision 2020, an idea introduced in 1998 by the Prime minister, Dr. Mahathir Mohammad.

The vision portrays an ambitious master plan, which forecasts that Malaysia would qualify as one of the fully developed nations by the year 2020. The present literacy level is about 88.7 per cent of the total population in Malaysia- slightly more than that of South Africa. Compared to that of other developed countries like the United Kingdom, Canada, Australia, and New Zealand (above 95 per cent), the gap is very small. This high literacy level has given the Prime Minister confidence to lay emphasis on the vision so that it will become a reality. The Prime Minister noted, "When this vision was first made known, there were some uncertainties whether the people in this country would accept it. It is obvious now that vision 2020 has become the focus of attention of the whole country including academicians, administrators, politicians and even people in the villages now talk about vision 2020. (*Abdul Hamid, 1991*). It is also worth knowing that Malaysia got her independence 31<sup>st</sup> August, 1957 with a population of about 28,728,607 (July 2011,est.)

## 2. Policy overview

The first policy plan was implemented in 1966-1970 with the initial objective being to provide housing units as a component of social services. *World Power Dictionary* describe **social** as living in an organized group or community, (*World Power Dictionary, 2002*). The Second Housing Plan (1971-1975), the Third (1976-1980), Fourth (1981-1985) and the Fifth Housing (1986-1990) Plans were meant to improve Malaysia's socio-economy especially in poverty alleviation and the restructuring of the society. It was during this time that the first formal and well-structured housing programs were undertaken to provide low-cost housing to meet the needs and aspirations of the poor. With parallel advancement in the telecommunications and modern transport systems, the growth of urban and rural boundaries have expanded dramatically such that property developments are no longer centralized in one specific area, New townships have been emerged where it did not exist before. Nonetheless, the outcomes of housing policy at local and national level in Malaysia have contributed towards rural integration,

harmony, joy and peace for its population as well as enhancing its Federal Republic unity. As a result, tourism and foreign investments have flourished and multiplied over the years.

Housing and social services continue to be a priority of Malaysian development programs aimed at improving the quality of life and contributing towards a harmonious and caring society. The Sixth (1991-1995) and Seven (1996-2000) Malaysia housing policy Plans were intended to provide a balanced and equitable development for Malaysia. During the seventh plan period, however, various programs for the development of housing were implemented in the urban and rural areas. The overall performance of the Malaysian housing programs was encouraging, with achievement and successes surpassing the plan target. This is because both the public and the private sectors undertook various housing projects. While the private sector focused more specifically on the overall market demand, the public sector continues to provide houses for sale or rent to the low-income group and public sector employees. Housing programs continued to be implemented based on the human settlement concept, whereby housing estates were provided with communal and recreational facilities. The implementation of other social services, programs, like services in the local authorities, fire and rescue operations and services, library services, information and broadcasting, sports and culture as well as family and community development contributed towards improving the welfare of the people and creating a well-informed, harmonious and a caring society.

In the eight-plan period (2001-2005), the objectives of the housing development programs were focused to increase accessibility to adequate, affordable and quality houses for all income groups. Priority will continue to be given to the development of low-and low medium-cost houses. Both the public and the private sectors have intensified their efforts in the implementation of the housing programs to meet the accentuating and increasing demand. The provision of other social services were continued and expanded with a view towards improving the quality of life, inculcating positive values and encouraging self-reliance. During the plan period, a total of 800, 000 units of houses were planned for construction to meet the housing needs. But interestingly, a total of 859, 480 units or 107.4 per cent of the plan target was completed. The private sector targeted to build 570,000 units but completed 737,856 units or 129.4 per cent of the target. However, the distribution based on the type of houses was not in line with the target set whereby the private sector mainly built medium-and high cost houses. This was reflected by the completion of a total of 554,458 units of medium and high-cost houses or 291.8 per cent of the plan target. In the area of Low-Cost housing category, the performance of both the public and private sectors was encouraging with a total of 190,597 units completed or 95.3 per cent of the target. Of this, 129,598 units were constructed by the private sector with the balance by the public sector including State Governments and State Economic Development Corporations (SEDCs). In an effort to increase the quality of low-cost houses, new designs with a floor area of 60 square meters incorporating three bedrooms as well as washing and drying areas especially in high-rise buildings were introduced. In the Low-Medium cost housing category, a total of 72,582 units or 20.7 per cent of the target set was achieved. The low performance was due to cautious Investment decision by housing developers.

The Ninth Malaysian Plan (2006-2010), was consistent to build a country with an advanced economy, balanced social development and a population which is united, cultured, honourable, skilled, progressive and far-sighted. To deliver this plan, they said we need to multiply our efforts towards achieving greater success in order to build a civilisation that will elevate the nation's welfare and dignity.

Accordingly, the Tenth Malaysia Plan (2011-2015), houses the aspirations of both the Government Transformation Programme and the New Economic Model, premised on high income, inclusiveness and sustainability. It dictates and charts the development of the nation for the next five years, anchored on delivering the desired outcomes for all Malaysians. The plan contains new policy directions, strategies and programmes that shall enable the country to emerge as a high-income nation. The development programmes were tuned to the six National Key Results Areas, outlined in the Government Transformation Programme, the National Key Economic programme Areas of the Economic Transformation Programme and the strategic economic reforms in the New Economic Model. The Plan details strategies towards a more focused role for the Government as a regulator and a catalyst while upholding the principles of 1 Malaysia: People First, Performance Now to ensure effective delivery of service.

### **3. Objectives for Housing Development Policy**

Any future policy designed to achieve sustainable housing development should necessarily be designed to meet the following three primary objectives.

- The first is that future policies must provide the basis for household improvement. Few poor families fail to notice if the effect of such policy led to an improvement or otherwise in their particular case. That is the acid test for the lower income groups. Site and services failed because it left the lowest one-fifth of the income distribution behind. If progressive improvement in the Turner (1967) sense is to be believed, it is essential that this forgotten fifth integral part of the population participate in the improvement as well.

- The second objective of the policies which could result in sustainable housing development is concerned with the improvement of poor people. At least 50% of the urban population in the developing world has been marginalised. Not only they must be heard by urban decision makers, they must also have influence on matters that affect their future destinies.
- The third objective of such policies must be to psychologically give this lower segment of the urban society a feeling of self-worth. If the people have pride in what they are able to achieve, it is obvious that the other two objectives concerned with the achievement of improvement and empowerment will also be met.

Essentially, demographic improvements in Malaysia's health services have been able to decrease death rates and increase life expectancy at birth and reduce infant mortality rates thereby enhancing population growth that are forging accommodation problems. Demography is the study of the statistics of births, deaths, disease etc., as illustrating the condition of life in communities (*Oxford English Reference Dictionary*, 1995). Malaysia has a population of 23.27 million according to national census conducted in 2000 as against 18.38 million in 1991 (*Population Distribution: Putrajaya 2001*). The current population of Malaysia stands at 28,728,607 (United Nations, July 2011, est.).

#### 4. Triple Set of Actions for Improving Housing Development Policies

- First, government can build residential units and rent same at full or subsidised rates or give them to recipients.
- Second, government can take steps to lower the price of housing, making it more affordable to the residents.
- Third, governments can improve the workings of the market to facilitate home ownership among citizens through steps as making mortgages and other home loans more readily available or through improvements to the access to residential land. If one reviews the housing policies that have been suggested by international agencies and followed by governments around the world, these three sets of actions, referred to here as phases, despite the danger of over generalisations, appeared to have occurred almost in chronological order.

#### 5. Basic Plans of the Housing Policy Concept

From the point of view of citizens, the principal aims of housing policy are:

- To make housing for the public readily and more affordable,
- To increase the supply of housing, especially via the support of new construction,
- To increase the quality of housing, in particular by helping owners to manage, maintain, repair, and modernize the housing stock.
- To ensure the constant functioning of instruments available to most income groups, the on-going monitoring of their effectiveness and efficiency, and any necessary corrections.
- To apply the rules of the EU common market, especially conditions regarding the compatibility of State aid.

The fulfilment of the above-mentioned goals will be supported in the legal field by creating a quality, coherent legal framework, and by efforts to enhance the legal awareness of the population and improve the enforceability of the law. 'An analytical study focusing on the distribution of powers in the field of housing policy between the central level of public administration, regions, and municipalities'; material discussed by the Government in June 2001, 'Proposal for the distribution of powers in the field of housing policy', material discussed by the Government in May 2002.

In order to achieve this, ancillary economic instruments will continue to be used that are used to bring supply and demand for housing closer together; these instruments will be similar to those used in developed European countries. The register of existing instruments will be adjusted to cover all groups of the population that need State aid in the field of housing. During the finalization of the register of ancillary instruments, the Government will respect the economic possibilities of the State, including the guidelines stemming from the reform of public finances, and will strive to improve their effectiveness and expediency. Improvements in the situation, especially in the field of care for the existing housing stock, will also be encouraged by the monitoring and revision of the requirements of the European Union related to technical standards, which in some cases unduly aggravate the situation of housing stock owners.

The most important tasks of housing policy for this period will vehemently include:

- Ensuring an adequate supply of affordable rented housing for households in the medium and lower income brackets.
- An emphasis on the use of the existing housing stock, preservation, reconstruction and renovation, with a stress on improvements to the quality of residential units, including their energy requirements and the

environment.

- The rounding-off of the legal framework of housing, especially via the new modification of private law, i.e. the Civil Code and Commercial Code, which will intervene significantly in many areas which are currently regulated by special laws and which will have to be subsequently amended.

Modern housing policy, which this conception aims to create, is based on three basic pillars:

- The first pillar is the creation of rules to govern entities active in the field of housing (citizens, municipalities and regions, construction companies, estate agencies, financial institutions, etc.). Primarily at issue here is the creation of a legal framework regulating not only affairs connected directly with the ownership and management of properties, but also related affairs such as the financing of housing and social aspects of housing.
- Another pillar is the creation of an adequate economic environment and system of support and regulatory instruments, the aim of which is to bring the supply of housing more into line with demand and as such to ensure the broadest possible availability of quality housing for the population.
- The third pillar is the 'social doctrine', which is the basis for the creation of measures focused on citizens who need State assistance to ensure they have standard housing. State intervention in this field has the form of direct social benefits, the offer of affordable rented housing, and social services.

According to Tolba, (1987), the then head of the United Nations Environment Programme, he observed that sustainable housing development policy should necessarily include:

- The notions that people-centred initiatives are needed; human beings in other words, are the resources in the whole concept.
- Help for the very poor because they are left with no option other than to destroy their environment.
- The idea of self-reliant development, within natural resource constraints.
- The idea of cost-effective development using different economic criteria to the traditional approach, that is to say development should not degrade environmental quality, nor should it reduce productivity in the long run.
- The great issues of health control, appropriate technologies, food self-reliance, clean water and shelter for all.

According to the United Nations Human development programme (2006, p. 16), the number of slum dwellers in the world has increased from 715 million in 1991 to 913 million in 2001, and to 998 million in 2005. Projections to 2020 suggest that the world will have up to 1.4 billion slum dwellers. Certainly, if the number of slum dwellers is increasing annually, it seems rather that **best** practiced housing policy is still **deficient**. In fact, government officials are relatively limited in the number of policy supported actions they are able to take in supporting the housing needs and aspirations of their citizenry.

## 6. Concept of Sustainable Development

The World Commission on Environment and development (1987) has defined Sustainable development as a development that meets "*the needs of the present without compromising the ability of future generations to meet their own needs.*" In order to be sustainable, housing initiatives must be economically viable, socially acceptable, technically feasible and environmentally compatible (Choguill, 2007). Housing therefore, must encompass the immediate environment, sanitation, drainage, recreational facilities and all other economic and social activities that makes life worthwhile (Olejado, 2003). It could then be said that real sustainable housing development can only be achieved by recognizing the three sides of the Smart Housing Triangle to wit: Environmental, Social and Economic (BDAQ, 2008).

The word "sustainable" is derived from a Latin word 'sustain', which provide more than ten meanings. The main ones are to "maintain", "support" or "endure" (Onions et al, 1964). Since 1980, the word 'sustainability' has been used for human sustainability on planet Earth which resulted in the most widely quoted definition of sustainability and sustainable development. More than 300 definitions of sustainable development have been published globally with multiple views, opinions and judgements (Moles & Kelly, 2000). Brundtland Commission of the United Nations defined sustainable development as a process of change in which the exploitation of resources, the orientation of technological development and institutional change are made consistent with the future as well as the present needs. In other words, "*Sustainable development is a development that meets the needs of the present without compromising the ability of the future generations to meet their own needs*" (Smith et al, 1998; United Nation General Assembly, 1987; Robert et al, 2005). Most authors used this quotation to define "sustainable development" but they usually skipped the key concept 'needs' which directly relates to the urban poor. The idea of the limitations imposed by the state of technology and social organization on the environment and its ability to meet present and future needs (Ball & Milne, 2005; Radcliff, 2005; Jacobs, 1999). Prior to Brundtland's report, sustainable development concept has been in place for few years but the definition was limited to secure the survival and well-being of humanity (IUCN, 1980). The



concept of sustainable development similar to its modern form was first used by the World Council of Church in 1974. The concept was also put forward by the International Union for the Conservation of nature and Natural Resources in 1980 (Dresner, 2008). The term sustainable development becomes prominent in 1987 when the United Nations Commission on Environment and Development published its report on “Our Common Future” (WCED, 1987). Several definitions were established in shaping the new concept on sustainable development commensurate to its implementation.

According to International Unions for Conservation of Nature and Natural Resources, (1980), sustainable development was put forward as the integration of conservation and development to ensure that modification to the planet secure the survival and wellbeing of all people. Equally, sustainable development is further defined as a development that is likely to achieve lasting satisfaction of human needs and improvement to the quality of human life (Allen, 1980). Besides the Brundtland report, Radcliff, (1987) in his book entitled “Sustainable Development: Exploring the Contradiction” defined sustainable development as a development that addressed the three major areas which comprised people living today being entitled to justice and equal rights, environmental degeneration must be alleviated and future generation must not be impoverished as a result of current actions. Repetto, (1986) has defined sustainable development as a development strategy that manage all assets, natural and human resources, as well as financial and physical assets, for increasing long-term wealth and wellbeing. It excludes policies and practices that support current living standards by depleting the productive base to leave future generations with improper prospects and greater risks than our own. Panos (1988) avers that sustainable development is a new era of economic growth, one that is forceful, globally and environmentally sustainable, with a content that enhances the natural base rather than degrading it. Accordingly, sustainable development is also defined as a change in consumption pattern and behaviour towards more environmentally products and a change in investment pattern towards augmenting the environment capital base (Pearce et al, 1989). Engle, (1990) viewed sustainable development as the kind of human activity that nourishes and perpetuates the historical fulfilment of the whole community of life on earth. In addition, sustainable development is a handrail that guides us along as we proceed towards development, (Tinchell, 1991).

United Nations in their Earth summit held by the United Nations Environment Programme (UNEP) in Rio de Janeiro (1992) defined sustainable development as “improving the quality of human life while living within the carrying capacity of supporting eco-system”. This definition has an impact on the economic, social and environmental development which was formally adopted across the world. Berke, (2002) found that sustainable development is often represented as a balance between economic, social and equity. To prove this statement, the agenda 21 of the World Summit on Sustainable Development in Johannesburg in 2002, defined sustainable development as the kind of development that need to be pursued to achieve sustainability. It is a continuous process of maintaining a dynamic balance between the demands of people for equity, prosperity and quality of life which is ecologically possible and environmentally feasible. Another view avers that sustainability is related to quality of life in a community whether economic, social and or environmental components that make up the community which provide a healthy, productive, meaningful life for all community residents, present and future (Hurt, 1998). Moreover, it is also a vague concept, for vague concepts such as liberty, equality and justice (Timberlake, 1998).

In 2005, Brian in his book “Rough Guide to Sustainability” developed an opinion of sustainable development from the perspective of architects. It defined sustainability as a complex concept, being a process to develop a system with the cooperation of ecological, economic, social and natural. A large portion of designing sustainability deals with addressing global warming through energy conservation and using techniques such as life-cycle assessment to maintain balance between capital cost and long term asset value. Munier in his book “Introduction to Sustainability: Road to a better future” quoted “*We do not inherit the earth from our parents, we borrow it from our children*”. This statement has conveyed the idea conceived by Brundtland. The office of the Deputy Prime Minister (ODPM) United Kingdom, defined sustainability as the achievement of a better quality of life through the efficient use of available resources which realizes continued social progress while maintaining stable economic growth and caring of the environment (OGC, 2007).

According to Hasna, A.M. (2007), sustainability is a process comprising development of all aspect of human life affecting sustenance. It means resolving conflict between various competing goals which involves the simultaneous pursuit of economic prosperity, environmental quality and social equity. These elements are famously known as three dimensions called the “Triple Bottom Line” with the resultant vector being technology, hence it is a continuously evolving process, the ‘Journey’ (process of achieving sustainability) is of course vitally important, but only as a means of getting to the destination (the desired future state). However, the destination is not fixed in the normal sense that we understand. Instead, it is a set of wishful characteristics of the future system. Roosa, S.A. (2008) is of the view that, sustainability manifests itself as a set of policies, programmes and initiatives each with its own implications. Sustainability clothes itself with a systematic analysis approach that considers how processes are redesigned and managed with the hope of yielding a much better long term results. More favourable, outcomes are those that best meet the goals of agenda after trade-off are considered.

Sustainability is hoped to be achieved when the agenda's guidelines are successfully implemented and the sustainable development can be thought up as a physical outcome that occur when the guidelines are followed. Ding (2008), defined sustainable development as a concern of attitudes and judgements to help ensure long term ecological, social and economic growth of the whole society. Sustainable development is basically the act of balancing the fulfilment of human needs alongside with the protection of the natural environment to ensure human needs are being met in the present time and in the future. Sequel to this, sustainable development can be perceived as an idea for mankind to simultaneously acquire balanced achievement between economic development, social and environmental objectives and priorities (Said et al, 2009). The universally accepted definition of sustainability is elusive, because it is expected to achieve many things. It also needs to be factual and scientific 'destination'. Therefore, sustainability is a tool for improving the quality of human life while living within the carrying capacity of the supporting eco-system.

### 7. Elements of Sustainable Housing Development

Development must fulfil certain features before it is coin 'sustainable'. Some of these features include social dimensional feature, economic and environmental features or the "Triple Bottom Line" approach (Roger et al, 2008). Out of these three features, the environmental dimensional feature is very important in the sustainability of any project because all economic activities utilised the environment and hence depleting the natural resource base (Markandya, 2006). The social feature is also significant in ensuring the sustainability of the project with its social attribute (Soederbaum, 2008) as the society gets the benefit from it for a long term period. More so, the economic features are imperative features in sustaining a project due to the fact that a project goal is not all about reaping benefits of the environment, but also sustaining the environment in a good manner so that the benefits reaped will be for a longer period of time and this can be under taken through the efficient use of natural resources (Ratner, 2004). These three features are referred to as the pillars of sustainability.

Hildebrand and Paul (2007) asserts that the three major recommendations of the conference on Human Environment held at Stockholm 1972, Brundtland Report in 1987 and the Rio Summit in 1992 are very similar and increasingly more detailed in their analysis and that the key components of Sustainable Development are:

- Protecting the Environment and the services provision to humanity.
- Economic growth generated by sustainable patterns of production and consumption of Resources.
- The social wellbeing and the equity of all humanity plus equitable access to current resources and in the future.

Consequently, these three fundamental components of sustainable development, most researchers or authors use this triple bottom line approach to describe sustainable development elements but presented usually in different ways, languages and meanings. Most of them believed that an effective sustainable measurement must consider the three triple bottom line approach of economic, social and environmental dimensions (UNEP, 1992); UNCED, 1993; Elkington, 1997; Bennett & James, 1999; Langston & Ding, 2001; Salim, 2004; Hezri & Hassan, 2006; BDAQ, 2008; Zainul Abidin, 2009). These three components are inter- woven and or inter dependent on each other (Salim, 2004).

Economic sustainability refers to a system of production that satisfies the present levels without compromising the future needs, given the environmental constraints and cost (Basiago, 1998; Khan, 1995). It also seeks to minimise the flow of income generated while at least maintaining the stock of assets which yields these beneficial outputs (Said et al, 2009). The social sustainability is also an important aspect that equity and poverty alleviation which include protective strategies that reduces vulnerability, improve equity and ensure that basic needs are met. The environmental aspect of sustainability is the maintenance of the factors and practices that contributes to the quality of the environment on a long term basis (Business Dictionary). There are elements of sustainability which have been considered to be incorporated depending on the situation and its compatibility. According to the three reports as have been mentioned in the earlier paragraph, they give similar pillars to sustainable development, but the Conference on Human Environment in Stockholm in 1972 (Stockholm Report) added another fundamental component to the elements which is *sustainable level of population growth*. In the report, it was told that "if developing nations are allowed to meet their basic needs (economic, social and environmental), then there is definite need for a sustainable level of population which need to be planned for". Aguirre M.S. (2002) stated that economic and environmental sciences are often used to support such policies in an attempt to establish a relationship between population, resources, environment and economic development. Brian, (2005) on the other hand, highlighted that to achieve sustainable development, the triple bottom line of sustainable development must be taken into consideration. Environmental protection, social progress, economic prosperity and availability of resources are the triple bottom line of sustainable development. Simon and Jonathan, (2002) defined sustainable pillars to consist the economic, social, environmental and political elements. In Hong Kong, however, a model of sustainable development can satisfy certain objectives of sustainable development in the long run without infringing upon the political, economic and social constraints of Hong Kong (Lai et al, 2006). Cultural pillar is one of the sustainable pillars to consider in achieving sustainable development

and it was used by the ancient thinkers of India Kaulitya in his *Magnum Opus*, who was of the view that sustainable development model involve no wastage of resources and it ensures a stress free economic, social, political and cultural well-being (Bhalachandran, 2011). He also pointed out that in order to achieve sustainable development in developing countries of Southeast Asia, the environment, socio-economic and cultural parameters must be considered (Shafii, et al, 2006).

Technical and institutional governance is another vital parameter that can be incorporated as another pillar for sustainable development. According to Pareja and Stoa, (2004), the visions of sustainable development consider the economic, social and environmental pillars but some models have extended by adding institutional and or governance pillar. The latter is used for housing development which refers to the cooperation, partnership and participation of different actors in the process of “Sustainable Housing Development”. This pillar play a key role in formulation, implementation and evaluation of housing and urban policies, instrument, programmes and individual projects which its governance consist of local politicians, civil servants, employee and residents. Choguill, (2007) focused on the technical aspect which states that in order to achieve sustainability in housing development, housing initiatives must be economically viable, socially acceptable, technically feasible and environmentally compatible. The technical feasibility refers to the Design, Construction and other Implementation elements for Sustainable Development. To ensure sustainable housing development on the terrace or hill side however, the most important sustainable pillar to be adopted and use is the environmental and technical elements. These two pillars are important in maintaining the stability of the land along the terrace and or hill side. This shall involve the investigation of topography, to choose a suitable site for sustainability of the developments. The technical elements are the building design, structure and maintenance design.

### **8. Criteria for Sustainable Housing Development**

Sustainable housing development is increasingly becoming linked with the concepts of quality of life, wellbeing and life ability (Michalos, 1997). Housing is an essential component of both quality of life and sustainable development. It is one of the prevailing factors that give an impact on the general economy which is also an important component to social development that activated cultural feature, appearance of aesthetics value and the way of life (Said et al, 2009). Housing development plays a very important role in attaining the goal of sustainable housing development, (Choguill, 2007). The general factor of sustainable housing development practice that is applicable under various circumstances depending on the conditions where it is implemented, (Larasati, 2006).

Sustainable housing is a new concept proved to be difficult, (Ebsen, 2000). Premius (2005) defined “sustainable housing” as housing that is geared towards meeting the needs of the current residents without compromising the ability of future generations to meet their own needs with minimum impact on the environment. The needs of current residents are diverse including safety, physical and mental health, privacy, entertainment, education, socialization, comfort, adaptability, access to workplace, transport, utilities and services, availability of garden space, access to foodstuffs and other commodities that are relatively affordable (Tuohy, 2004). Besides that, SHE (2009) defined sustainable housing development as a qualitative construction with affordable price and psychological impact with eco efficiency elements in terms of efficient use of non-renewable resources. Brown and Bhatti, (2003) also pointed out that sustainable housing development system must be incorporated with social, economic and environmental sustainability in a mutually reinforcing way. In the same vein, sustainable housing can be defined as housing practices which struggle for vital quality which include economic, social, environmental performance in a broad way (John et al, 2005). Brian, (2005) established that sustainable housing development is a development that creates sustainable communities in resource efficient manners referring to energy, water, land, material and labour. It also brings together physical, social and cultural factors into a single agenda. Likewise, sustainable housing development has been classified as the minimisation of environmental impacts of material use, energy and water consumption during the whole service life of the building (Abu bakar et al, 2010). Operating the fundamentals of sustainable development and applying it to the real life situation is much more difficult than one may expect because the concept has been applied considering the quality of development in human settlements, (Choguill, 2007). According to Carter (2005), when considering the development of a sustainable housing project, the developer need to ascertain the site location, design quality, energy efficiency, funding, transport, supply chain and recycling.

Winston, (2007), stressed that the important aspect of housing development that needs to be emphasised include such elements as location, construction and design, dwelling use and regeneration. In terms of location, the characteristics are sustainable land use planning which resist scattered settlements. In construction and design aspect, the elements are: higher residential densities, sustainable construction including energy efficiency and local renewable materials, design for sustainable use including energy use, water recycling and treatment, waste recycling, housing quality, easy access to green space, attractive, clean and safe residential environment, housing affordability, tenure, social aggregates and social resources. For dwelling use, the elements are: high energy, efficiency in dwelling use, waste recycling, sustainable management, etc. Finally, the

regeneration aspect focuses on all of the above elements with keen emphasis on renovation rather than demolition. This feature has been proved by Tosics, (2004) who affirmed that housing is linked to sustainable concept in a number of ways as location, construction, design management and maintenance, use of housing, etc. Zhang, et al (2011) added that green elements in developing property projects varied and applicable across the project life including site selection, planning and design, construction operation, and maintenance of buildings.

According to the US Green house Building Council (2009), green building is a practice of increasing the efficiency of new buildings and reducing their impact on human health and the environment through better site location, design, construction, operation, maintenance and removal. Similarly, based on the US Environmental Protection Agency, EPA (2009), green building is also known as sustainable or high performance building which is the practice of creating structures and using processes that are environmentally responsible and resources that are efficient throughout the building's life cycle from setting-out the design to construction, operation, maintenance, renovation and deconstruction. This practice expands and complements the classical building design which consider economy, utility, durability and comfort. The Australian Urban Ecology, (2007) states that green buildings must make the best use of the sun, wind, rainfall, to help supply the energy and water needs of the occupants. The buildings should be multi-storey to minimise the land available for the green space and key resources like energy, water, materials and land more efficiency than traditional buildings with more natural light and better air quality. It will contribute to improve health, comfort and productivity of users.

Muttigi, (2001) is of the opinion that green buildings are extremely cost effective over the life time of the home's operation, while the upfront costs may be a bit higher in some cases (traditional costs continue to decrease), but green buildings are less costly to maintain, reap benefits from lower utility costs and greater energy liberty and provide better indoor air quality than buildings constructed to conventional standards and codes alone. Housing with sustainable features shows multiple advantages in contrast to conventional housing. The environment is good and embraces reductions in carbonates production, increased energy production, have no negative impact on natural and undeveloped lands especially on greenhouse gases and operation. In terms of economic advantages, it entails direct cost saving from low energy consumption and operation expenditure and financial incentives. Social advantages of sustainable buildings include increased user health, comfort, functionality, durability, management and reputation (Yates, 2001; Heerwagen, 2002). Karuppanan and Sivam, (2009) claimed that to achieve sustainability in housing sector, it needs to achieve a manner of eco-efficiency, location and design criteria, create a community which will be socially acceptable and viable. Location is economically feasible, and the eco-efficiency will be compatible to the environment. It should be developed near transport nodes and transit corridor. It will allow and facilitate the use of public transport rather than private cars and this will reduce transport and infrastructure cost. Design plays a key role in providing sustainable housing development in relation to the site area itself. According to Smart and Sustainable Homes for Gold Coast (Innovation House 2) in lot 19, Picnic Creed Road (Off Amity Road), Coomera, the sustainable housing incorporates numerous climates smart design features including passive design which is of good ventilation, insulation, shading and lightweight construction, building materials, energy efficient skylights and natural lighting with good window design, low toxic eco-paint, instantaneous gas, hot water, high technology underground and slim line above ground water tanks, water efficient products and appliances, energy and water used monitoring system, sustainable bamboo flooring and solar pavers that light the way to the self-opening front door at night. This show case depicts how a good simple design can create a home that is safe, accessible and flexible to demonstrate complete lifestyle and economic benefit of sustainable house. The design of sustainable Home Gold Coast is based upon integrating a broad range of sustainable housing principle such as energy and water conservation, passive solar design, breeze way design, intelligent construction, adaptability to changing family formations as well as health facilities, accessibility for aging residents and people with range mobility.

## **9. Indicators for Sustainable Housing Development Mechanisms**

A review of several methods has been conducted to measure the sustainability of housing development. Different variables have been applied depending on the nature, location, environment and climate, (Said et al, 2009). This paper perused eleven (11) methods of sustainable housing development indicators adopted by several countries as follows:



**Table 9.1: World Green Building Rating Tools**

S/no.	METHODS OF RATING ADOPTED	COUNTRIES
1	Green Building Tool (GB Tool)	Europe, USA, Canada
2	Leadership in Energy & Environment Design (LEED)	Brazil, Mexico, India
3	Comprehensive Assessment System for Building Environmental Efficiency (CASBEE)	Japan
4	Building Research Establishment Environmental Assessment Method (BREEAM)	United Kingdom, Netherlands
5	High Environmental Quality (HQA)	France
6	DGNB Certification System	Germany
7	Green Building Evaluation System (EEWH)	Taiwan
8	Green Star	New Zealand, S/Africa
9	Green Mark	Singapore
10	HK BEAM	Hong Kong
11	Green Building Index	Malaysia

Source: Abu Bakar et al, (2010)

According to Table 1, all the eleven methods were used to measure sustainable housing development. Review of some of the best methods adopted by most countries is as follows:

❖ **Leadership in Energy and Environment Design (LEED)**

This method is used by about 120 countries including USA, Canada, Brazil, Mexico and India. They use it as their green building measuring tool. According to the US Green Building Council, LEED provides building owners and operators with a framework for identifying and implementing practical and measurable units to the green building design, construction, operation and maintenance, solutions of high performance green buildings, homes and neighbourhoods. LEED certification provides independent and third party verification that a building, home and community was designed and built using strategies aimed at achieving high performance in key areas of human and environmental health in terms of measuring the sustainable variables such as sustainable development site, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality and additional category innovation in design and priority. “LEED 2009 for New Construction and Major Renovations” is a set of performance standard for certifying the design and construction of commercial or institutional buildings and high rise structures of all sizes, both for public and private owners. The LEED points are awarded on a 100 points scale, credits are weighted to reflect their potential environmental impacts and additionally, 10 points bonus credit will be awarded for buildings with 100 points scale. The LEED ratings are as listed below:

**Table 9. 2: LEED Certified Rating System**

S/no	Rating	Point
1	Certified	40 – 49
2	Silver	50 – 59
3	Gold	60 – 69
4	Platinum	70 - Above

Source: United State Green Building Council, (2010)

To earn LEED certification, the projects must satisfy all the pre-requisites and qualify for a minimum number of points to attain the established project rating. Possible point for each variable include those on sustainable site (26 points), water efficiency (10 points), energy and atmosphere (35 points), materials and resources (14 points), indoor environmental quality (15 points), innovation and design (6 points) and regional priority (4 points).

❖ **Comprehensive Assessment System for Building Environmental Efficiency (CASBEE)**

This method was developed in 2002 as the Japanese green rating tool used for evaluating environmental building performance. According to Japan Sustainable Building Consortium (2006), CASBEE is developed under the guidance of the Ministry of Land, Infrastructure and Transport and it is used to assess buildings based on interior comfort, scenery and environmental awareness utilizing the energy saving material and equipment. CASBEE measures both improvements in living amenities for building user within property and the negative environmental impacts within and outside the property (Murakami, 2011). CASBEE evaluates using 5 grade rating system;

**Table 9. 3: CASBEE Rating System**

S/no	Rank	Grade
1	Excellent	S
2	Very Good	A
3	Good	B+
4	Fairly Poor	B-
5	Poor	C

**Source: CASBEE, (2006)**

According to Murakami (2011), the ranking system is structured into two main categories. The first structure is the Environmental Quality (EQ), this evaluate the living space including indoor environment, quality of services and outdoor environment on site. The second structure discusses the Environmental Load (EL) consisting of energy, resources and materials, off site environment, etc. Once the total of EQ and EL are measured, they can be compared to find the Building Environmental Efficiency (BEE) and the high BEE score implies a sustainable development representing low environmental impact.

❖ **Green Star**

This is a comprehensive, national, voluntary environmental rating scheme that evaluates the environmental design and achievements of buildings in Australia (OECD, 2003). According to the Green Building Council of Australia known as GBCA (2011), Green Star was developed for the property industry in order to establish a common language, set a standard of measurement for green buildings, promote integration for the building designs, recognize environmental leadership, identify building life-cycle impact and forges awareness of green building benefit. Green Star covers a number of variables which assess the environmental impact on project site location, selection, design, construction and maintenance. There are nine variables included in the Green Star rating tools to wit; Management, Indoor Environment Quality, Energy, Transport, Water, Materials, Land use and Ecology, Emissions and Innovations. All these nine categories are divided into different credits of which ratings will be awarded to a project that fulfil the overall Green Star objective. Table 4 gives the certified Green Star Ratings.

**Table 9. 4: Green Star Certified Ratings**

Green Star Rating	Score	Signified
4 Star	45 – 59	Best Practice in Environmentally Sustainable Design and Construction
5 Star	60 – 74	Australian Excellence in Environmentally Sustainable Design and Construction
6 Star	75 – 100	World Leadership in Environmentally Sustainable Design and Construction

**Source: Green Council of Australia, (2011)**

For the housing sector, GBCA has developed the Green Star – Multi Unit Residential vol. 1 rating tool and was officially released on 2 July 2009. This tool was developed to promote high performance for the design and construction of green residential development which enable the owner and developers to minimise the environmental impact to their developments, reduce Australia’s greenhouse gas emissions, capitalize on the environment benefit, receive recognition for a more environmentally sustainable design and deliver health and financial benefit and forge savings for the residents.

❖ **BREEAM (Building Research Establishment Environment Assessment Method)**

This is a set of standards for best practice in sustainable housing design, construction and operation, which has become one of the most comprehensive and widely recognised sustainable measurement tools of building’s environmental performance (BRE, 2010). The latter states that the measurements are used to evaluate buildings specifications, design and construction. The variable ranges from energy to ecology. It includes energy and water use, the internal environment (health and wellbeing), pollution, transport, materials, waste, ecology and management process. BREEAM has been developed to meet the principles of ensuring environmental quality through accessible, holistic and balanced measure of environmental impacts. Many elements determine the overall performance of a new project assessed using the BREEAM method. BREEAM’s rating encompasses level benchmark, the minimum BREEAM standard, the environment section weightings, the BREEAM assessment issues and credit (BRE, 2011). All these elements are combined to produce the BREEAM rating system as shown in Table 5.

**Table 9. 5: The BREEAM Rating System**

S/no	BREEAM Rating	Percentage (%) Scores
1	Unclassified	< 30
2	Pass	30
3	Good	45
4	Very Good	55
5	Excellent	70
6	Outstanding	85

**Source: BRE, (2011)**

In terms of developing sustainable housing, Eco Homes was developed by building Research Establishment (BRE) in 2000, to provide an authoritative rating for new, converted or renovated homes extending to flats and apartments (BRE, 2010; Tuohy, 2004). The Eco Homes scores are collected and allocated in seven categories which include energy, transport, pollution, materials, water, land use and ecology, health and wellbeing (Tuohy, 2004). Singapore Building and Construction Authority known as BCA (2010), Green Mark Scheme launched in January 2005. The green building rating system assesses buildings and rates their performance in these areas; energy efficiency (maximum points 70), water efficiency (14 points), environmental protection (32 points), indoor environmental quality (8 points) and the green initiatives (7 points). The green Mark Rating System is categorised into four levels as follows;

**Table 9.6: The Green Mark Rating System**

S/no	Green Mark Ratings	Points
1	Certified	50 – 74
2	Gold	75 – 84
3	Gold Plus	85 – 89
4	Platinum	90 and Above

**Source: BCA, (2010)**

❖ **The Green mark Rating System**

This scheme was developed to promote the adoption of green building designs and technologies that improve energy efficiency and reduce impact of the building's performance. Singapore has set a target of having at least 80% of its buildings to attain the BCA Green Mark Certified rating by the year 2030 (BCA, 2010).

❖ **The Hong Kong Building Environment Assessment Method (HK- BEAM)**

This was developed to provide guidelines for developer, designers, contractors and building managers on practices to minimise the adverse effects of buildings on environmental, whilst promoting healthy indoor environment (CET, 1999). HK- BEAM also defines good practice criteria for a range of environmental issues relating to design, operation, maintenance and management of the building (BEAM Society, 2009). Buildings that are planned, built, commissioned and maintained in accordance with the HK- BEAM standards of safety, healthy, comfortable, efficient and productive with lower environmental effect. It also assess projects using their whole life situation; site (25%), materials (8%), energy (35%), water (12%), indoor environment quality (20%). In HK- BEAM rating system, grades are based on level of credit gained with a minimum percentage of indoor environment quality (IEQ), credits needed to qualify for an overall grade (HK- BEAM Society, 2010). The rating system is shown below.

**Table 9. 7: HK- BEAM Rating System**

S/no	HK BEAM Rating System	Points	IEQ
1	Bronze	40%	45%
2	Silver	55%	50%
3	Gold	65%	55%
4	Platinum	75%	65%

**Source: HK- BEAM Society, (2010)**

❖ **Green Building Index (GBI)**

In Malaysia, sustainable building assessment tool is the Green Building Index (GBI) which is developed by Pertubuhan Arkitek Malaysia (PAM) and the Association of consulting Engineers Malaysia (ACEM) in January 2009. It is a profession driven initiative to lead the Malaysian Property industry towards becoming more environmentally friendly. The rating system will provide opportunity to developers to design and construct green sustainable buildings that can provide energy and save water, a healthier indoor environment, better connectivity to public transport and the adoption of recycling and greenery for their project (Mun, 2009). GBI

rating tool is divided into two categories; the residential and non-residential. The GBI tool for residential rating evaluates the sustainable aspect of residential buildings which include linked house, apartment, condominium, town house, semi-detached and bungalows. While the non-residential category evaluate buildings that are commercial, industrial, institutional like offices, hotels, factories, hospitals, universities, colleges and shopping malls. Similar to HK- BEAM in Hong Kong, GBI also uses the same variable to measure the sustainability of buildings with different variables for residential and non-residential buildings alike (GBI, 2011)

**Table 9. 8: The GBI Rating System.**

S/no	GBI Rating	Points
1	Certified	50 – 65
2	Silver	66 – 75
3	Gold	76 – 85
4	Platinum	86 ++

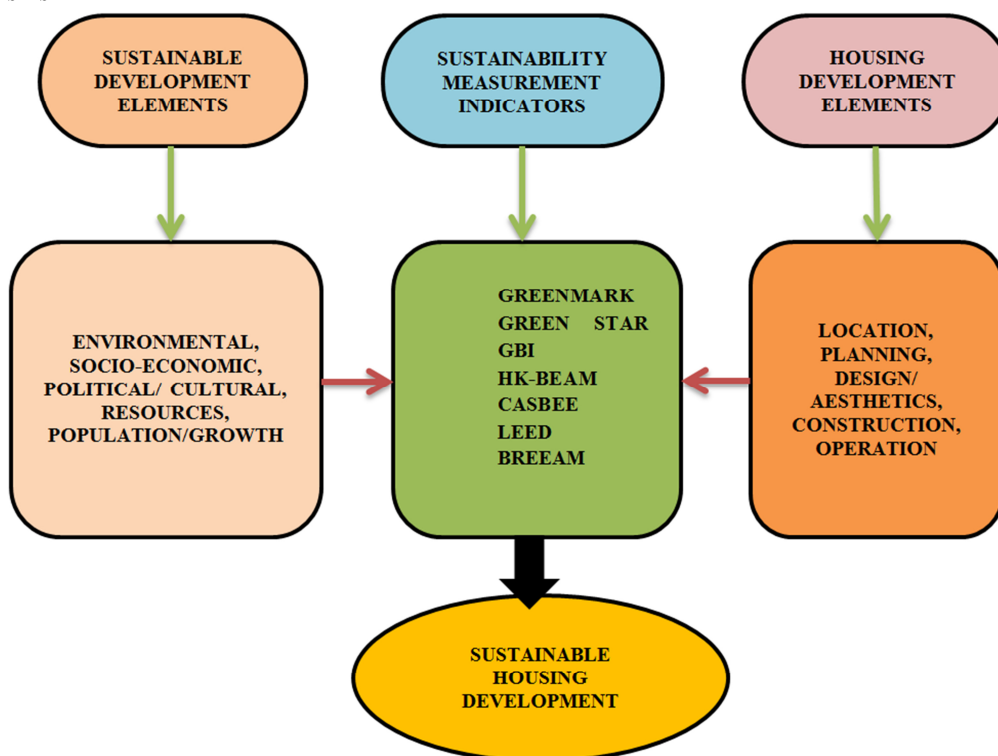
Source: GBI, (2011)

For residential aspects, the maximum points for the variable to be achievable comprises energy efficiency (23 points), water efficiency (12 points), material and resources (10 points), indoor environmental quality (12 points), sustainable site planning and management (37 points) and lastly innovation (6 points). For non-residential, the variable points to be focused are energy efficiency (35 points), water efficiency (10 points), material and resources (11 points), indoor environmental quality (21 points), sustainable site planning and management (16 points), the innovation aspect (7 points). These variables show that for residential purpose, sustainable site planning and management is the most important aspect while for the non-residential, is the energy efficient aspect that excelled in importance.

### 10. Theoretical Framework for Sustainable Housing Development Mechanisms

The interplay of Sustainable Development elements such as Environmental, Socio-economic factors, political and cultural resources, population growth, etc. and the inter-mingling of Housing Development elements like strategic location, good planning and design which fosters aesthetics, adherence to construction and operation guidelines, plus the application of the Sustainability Measurement Indicators and tools as the Green mark, Green star, the GBI, CASBEE, LEED, BREEM, etc. results to a viable Sustainable Housing Development.

#### 9.1 Fig.1 Schematic illustration of Theoretical Framework for Sustainable Housing Development Mechanisms





## 11. Malaysian Approach to Sustainable Housing Development

Malaysia is still in the progress of understanding the concept of sustainable housing. The effort to implement sustainability concept into every sector especially the housing sector is gaining attention from various parties. But the implementation process is still very slow and only a number of developers are willing to accept the concept (Zainul Abidin, 2009). Even though, the concept has not yet been implemented, it is equally important to develop sustainable housing structures on the terrace or hillside as this area is very charming and hence can foster aesthetics. Numbers of sustainable housing development projects in Malaysia are forging ahead. It seems that the key players in the housing industry are not sure whether or not they have ever considered and implemented sustainable elements into the housing projects (Said et al, 2009). Based on the National Housing policy (2010), the effort to adopt sustainable development is to balance the implementation and use of environmental friendly housing development concept with new technologies and innovations. The green technologies can help to preserve the environment in the circumstance of energy efficiency especially in building design. The use of recycling materials and the development of smart buildings can lift up quality of life and preserve the environment. Sequel to the CEO of Asian Strategy & Leadership Institute (ASLI), Dato, Dr. Michael Yeoh in the 13<sup>th</sup> National Housing and Property Summit Conference in 2010, the issues of sustainable growth is not yet timely in the light of the 10<sup>th</sup> Malaysian Plan but also serves as an important incentive for the Housing and Property industry to growth in line with the Government's goal of achieving high income nation status. He also reminded developers that they should not only take pride in design, quality and timely delivery of the products that are part of the branding exercise, but also be mindful of the social and environmental impact of their business. In the Green Building Index (GBI), Malaysia provides opportunities for housing developers and property to design and construct green, sustainable buildings that can provide energy and water savings, a healthier indoor environment, better connectivity to public transport, adoption of the recycling and greenery for their project as well as reducing the negative impact on the physical environment. Some of the components of the GBI are used to evaluate sustainability in building orientation, façade selection, rain water harvesting, natural lighting, air change effectiveness, storm water design, recycled content materials and construction waste management need to be adopted and taken into consideration during design stage (GBI, 2011). The GBI has listed nineteen sustainable residential projects in Malaysia, but only one of the residential projects is classified as having the Platinum standard, four achieved Gold standard, two Silver standard and the rest are in the classified category. The SII House that has greatly achieved the Platinum award, while Ken Bangsar achieved Gold. Sime Darby Idea House and Imperia @ Puteri Harbour and Melawati Service Apartment (Saville @ Melawati) are listed as winners. Treez Bukit Jalil and Rhombus won Silvers.

In 2011, the Asia Pacific Design Centre Awards ceremony held on 25<sup>th</sup> November in Wuxi, China, the SII House was a gold award winner in the detached/semi-detached housing category. It was also the winner of the green homes category in The Edge My Dream Home Awards 2011 in July. In Malaysia, the 12 000 sq. ft. built up SII House was the first GBI platinum-rated residential which is located in section 11, Petaling Jaya. This house is owned and designed by architect Dr. Tan Loke Mun from the Arch centre Sdn Bhd, who is one of the GBI team leaders. In terms of features, the SII House was designed similar to a tree in a hot tropical jungle with a large insulated canopy roof providing shelter for the living space beneath. The low pitch white roof reflects heat and provides a relatively flat as the working surface for renewable energy in form of solar PV panel, solar hot water heating, rainwater harvesting, wind turbines and light tubes. While the east and west walls are constructed from insulated light weight blocks with minimal windows and are further shielded by a wire mesh green wall. Equally, Recycled and low VOC materials, energy saving lighting and appliances are used throughout (Chan, 2011).

For the GBI Gold award, the Sime Darby Idea House is the first zero carbon housing prototype in South East Asia that has been selected. Besides the Gold award, this prototype house also received the Green Mark building award from Singapore's Building and Construction Authority (BCA). The idea house was built as a traditional Malay kampong house with passive design by careful orientation and minimal exposure to low angle sun. This is coupled with a large internally planned open spaces that encourages cross ventilation and maximum penetration of natural daylight, it also allow adaptability according to the expansion and contraction of the family nucleus (Pomeroy, 2010). According to Sime Darby, the green ideas that have been used includes landscape (the house is positioned as a pavilion within the landscape which both the house and the landscape are integrated via a landscape scheme divided into garden sections for health, well-being, healing, recreation and permaculture), orientation, climatic responsiveness and solar energy (to minimise heat and lower cooling loads), building form (inspired by traditional Malay kampong house in its social environmental responsiveness, higher roof volume and cross ventilation), rain-grey water management (water recycling), multi-disciplinary collaboration, scalability (use minimum cost), natural ventilation, topography responsiveness (this development responds to the contour of the site's topography, minimise cutting and filling of the landscape), environmental analysis (excellent daylight and natural ventilation). In a nut shell, the Malaysian green building for residential aspect is still limited, but the Malaysian Government and private parties including developers should cooperate

to develop more sustainable housing that shall ultimately accommodate the teaming populace to meets up with Malaysian vision 2020 to reach the status of a fully Developed Nation.

## 12. Conclusion and Recommendations

Sustainable housing development in Malaysia has been commendable, but at the terrace, Substantial maintenance and management culture should be upheld to arrest the pathetic landslide situation. It is equally important to develop sustainable terrace housing scheme as the area is a good scene, free access to fresh air, easy disposal of refuse and sewage system and quiet easy to develop. Terrace development also forges aesthetics, absolute privacy to all occupants and or residents. There is also adequate sunlight which is a good constituent of vitamin D, the topographical attire is also amazing and enhances joy and happiness. In the Green Building Index (GBI), Malaysia provides opportunities for housing and property developers to design and construct green, sustainable buildings that can provide energy and water savings, a healthier indoor environment, better connectivity to public transport, adoption of the recycling and greenery for their project as well as reducing the negative impact on the physical environment. Some of the components of the GBI are used to evaluate sustainability in building orientation, façade selection, rain water harvesting, natural lighting, air change effectiveness, storm water design, recycled content materials and construction waste management need be to adopted and taken into consideration during design stage (GBI, 2011). The GBI has listed nineteen sustainable residential projects in Malaysia, but only one of the residential projects is classified as having the Platinum standard, four of them achieved Gold standard, two gained Silver standard and the rest are in the classified category. The SII House has greatly achieved the Platinum award, while Ken Bangsar achieved Gold. Sime Darby Idea House and Imperia @ Puteri Harbour and Melawati Service Apartment (Saville @ Melawati) are listed as winners. Treez Bukit Jalil and Rhombus won Silvers; accordingly, this status should be improved.

Considering the National Housing policy (2010), the effort to adopt sustainable housing development is to balance the implementation and use of environmental friendly housing development concepts with new technologies and innovations. The green technologies can then help to preserve the environment in the circumstances of energy efficiency especially in the building design. The use of recycling materials and the development of smart buildings can lift up and harness the quality of life and preserve the environment. Sequel to the CEO of Asian Strategy & Leadership Institute (ASLI), Dato, Dr. Michael Yeoh in the 13<sup>th</sup> National Housing and Property Summit Conference in 2010, the issues of sustainable growth is not yet timely in the light of the 10<sup>th</sup> Malaysian Plan but also serves as an important incentive for the Housing and Property industry. Vehement measures be taken to develop in line with the Government's goal of achieving high income and a fully developed nation status by the year 2020. Developers should not only take pride in design, quality and timely delivery of the products that are part of the branding exercise, but also be mindful of the social and environmental impact of their business. The Malaysian green building for residential aspect is still limited, but the Government and private parties and developers must cooperate to develop more sustainable housing that shall ultimately accommodate the teaming populace to meets up with the predicted Malaysian vision.

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