Sustainability in the Housing Development Among Construction Industry Players in Malaysia

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ABSTRACT

Sustainable development concepts revolving around policies of economic; environmental; and social have been widely discussed in a worldwide scale. The housing industry by nature is multi-faceted, consumes natural resources and produces impact on the natural environment. It constitutes to economic activities and impacts on the economy in such a way that it is an important component of social development and quality of life. Thus, sustainability issues should not be exempted in housing development as housing being the key ingredient of progress and governance. Creating sustainable housing development depends on the knowledge and involvement of all players in the industry. This paper attempts to identify the elements of sustainable development and subsequently chart the level of awareness and implementation of sustainable housing development based on the current practice by the construction key players. Key players being the Clients, Professionals and Contractors were approached to measure the persistence and awareness of the sustainable development issues by means of questionnaires. The findings of this paper identified and benchmarked the elements which are important towards creating a sustainable housing development. In future research, a survey combining both interviews and questionnaire could be extended to a larger sized respondents of house buyers and key respondents to acquire better sampling findings.

Keywords: Sustainability, Sustainable Development, Housing, Construction Industry

INTRODUCTION

Sustainable development is basically the act of balancing the fulfillment of human needs alongside protection of the natural environment to ensure human needs can be met presently and in the future. Sustainable development is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs (World Commission On Environment & Development, 1987). Housing development is a key ingredient of progress and governance in any given nation. Creating sustainable housing development requires the knowledge and involvement of all parties in the industry. The construction industry should not exempt housing sustainability issues, or at the very least try to incorporate the basic principles of sustainability.

In Malaysia, smart and sustainable initiatives in housing have been highlighted by the government and communities alike; however, present legislations relating to habitation is more focused on physical development of housing, while social and cultural matters are not often considered. Public policies or strategies in housing mainly deal with affordability rather than sustainable inhabitation. A study of these issues reveals that there is little room for sustainability intervention in housing development. To date, all the information points out the need to promote a wider notion of sustainability in housing in order to improve the environmental performance as well as creating a greater impact of sustainability upon the lives of the community. This research investigates the level of awareness and knowledge among construction industry key players on the sustainability concept and issues in the housing development context; and how they perceived the integration of this agenda within their working environment. Construction industry key players are the target respondent in this research because of their strategic importance to implement sustainability in a housing project.
Research Objective

This study aims to:

i) Identify the important elements of sustainable development to be considered into housing;

ii) Determine the level of awareness and understanding of sustainable development;

iii) Discover the level of implementation of sustainable housing development that has been carried out based on the current practice.

Sustainable Development

Sustainable development can be perceived as an idea for mankind to simultaneously acquire balance and achievement between economic, social and environmental objectives and priorities. In support of this, several United Nations texts refer to the ‘interdependent and mutually reinforcing pillars’ of sustainable development as an economic development, social development, and environmental protection (UNCED, 1993). Sustainability involves the continuous process of maintaining a dynamic balance between the needs and demands of people for equity, prosperity and quality of life whilst maintaining healthy ecologies.

Figure 1: Sustainable Development Framework (Adopted from Chiu, 2003)

The concept of sustainable development corresponds to a key element domain that has its own distinct driving forces and objectives. The economy is geared mainly towards improving human welfare, primarily through increases in the consumption of goods and services. The environmental domain focuses on protection of the integrity and resilience of ecological systems. Fostering positive human development in promoting a fair and just society is a part of the social aspect of sustainable development (Rozana, 2007). The social aspects of planning, layout and design of housing, creates community spirit and identity thus, people are able to self actualize and have a good quality of life.

Sustainability objectives will be achieved only if they are implemented in all stages of the building process. Sustainability principles should be incorporated into the design and then carried forward to the construction stage to realize the concept. However; the goal to achieving sustainable development is the greatest challenge mankind has ever faced, requiring a concentrated joint effort among consumers, the housing industry and government. Therefore, the needs for a paradigm shift towards sustainability in housing are crucial amongst developers, professionals, builders, planners and owners.

In Malaysia there is increasing public awareness and interest in how buildings affect the environment, worker productivity and public health. As a result, both the public and private sector are beginning to demand buildings that optimize energy use; promote resource efficiency; and improve indoor environmental quality. Developers, owners, operators, insurers, and the public at large are beginning to value and market the benefits of sustainable building.
Sustainable Development: A New Perspective for Housing Development

The concerns about urban growth and development around issues of pollution, congestion, fuel use and building forms were debated in different ways across the globe. Similarly planning system and legislative frameworks become reworked around environmental and sustainability concerns. Housing by nature is multi-faceted; it consumes natural resources and produces impact on the natural environment. The position of houses, building materials, occupancy demands, energy and water consumption, all have major environmental implications.

Housing may be seen as one of the prevailing factors that impact the general economy which is also an important component of social development that cultivates cultural attribute, manifestation of aesthetic value and the way of life. A holistic perspective is needed to chart the future of housing development, and the paradigm of sustainable development for housing offers such possibility (Chiu, 2003). Housing is categorized as a basic human need, in which the quality cost and availability are crucial to an individual’s quality of life. With nearly 2 million homes and significant projected growths through building and stock transfer, housing associations have a major role to play in helping achieve a sustainable future.

The general system approach to sustainability can be applied more specifically to an urban development by viewing each urban housing development as a unique system (Barton, Davis, & Guise, 1995). Nevertheless, implementing the basic principles of sustainable development in the residential sector can be many pronged; where different approaches can be used to ultimately achieve the desired outcome (Llewellyn-Davies, 1997). The lack of a defined or rather standard systems approach will no doubt cause confusion and decreased interest in the vested parties since housing development practices currently implemented have been in place for so many years (Barton, et al., 1995).

Operating the fundamentals of sustainability and applying it to real-world human settlements situations are much more difficult than one might expect. It is only more recently that sustainability has been applied to a consideration of the quality of development in human settlements (Choguill, 2007). Among the actions are to develop homes constructed out of recyclable or renewable materials, designed for a longer use and have minimal impact on the environment (Mobbs, 1998).

It can be argued that environmentally friendly houses allow for more affordable living in the long run as they minimise energy costs. However, it is perceived that neither the private market nor public housing providers have shown much interest in environmentally sustainable housing, because housing are driven by the marginal cost of construction and the question of affordability. The concept of sustainability in housing development should be limited within the need to fulfill basic human needs, absorptive capacity of waste absorption limits, minimizing the use of non renewable resources and promote use of renewable resources. With this inclusion, the general approach of sustainability can be tailored to address human settlement issues.

The main goal of sustainable housing is to develop affordable housing that are (1) durable and long lasting; (2) cost effective to build & practical to maintain; (3) use natural resources and materials efficiently based on their life-cycle environmental impacts; (4) Conserve water, reduces runoff and treats waste-on site; (5) maximise energy conservation and efficiency; (6) Reduce building footprints, simplify building shapes and maximize space efficiency; (7) optimise building orientation to integrate natural daylight and ventilation; (8) healthy by eliminating toxic and harmful materials in facilities and surrounding environment; (9) support transportation alternatives; (10) reduce, reuse and recycle materials in all phases of construction and deconstruction; (11) apply maintenance and operational practices that reduce or eliminate harmful effects on people and environment, and (12) design for future flexibility, expansion and capable of safe and efficient building demolition (Housing-Corporation, 2002).

The guidelines set may have aided housing developers to set performance specifications to better design and evaluate projects. This will act as a base to develop a framework for sustainability.
Elements That Promote Sustainable Development

Economic Aspects

Economic sustainability refers to a system of production that satisfies present consumption levels without compromising future needs; given the environmental constraints and costs (Basiago, 1998; Khan, 1995). The modern concept underlying economic sustainability seeks to maximize the flow of income that could be generated while at least maintaining the stock of assets which yields these beneficial outputs. The development of technology, building materials and housing designs to mitigate environmental impact of housing activities, and their implication for financial viability of housing projects, are important.

Environmental costs theoretically need to be accounted as production costs, if long term sustainability and equity are to be sought as mandated by the advocacy of sustainable development (Munro, 1995). The environment cost also refers to the financial viability of private housing projects, or the socio-political gains against financial costs for subsidized housing projects and the ability of housing consumers to afford an acceptable quality of housing. It is inferred that in order for housing to be economically sustainable, the benefits to housing providers and producers must at least be equal to the costs of housing production given the housing demand levels.

Social Aspects

Social capital is the resource which people draw upon in pursuit of their aspirations and is developed through networks and connectivity, membership of more formalised groups and relationships of trust, reciprocity, and exchanges (Munasinghe, 1992). There is also an important element of sustainability that incorporates equity and poverty alleviation. Thus, the social dimension of development includes protective strategies that reduce vulnerability, improve equity and ensure that basic needs are met. Future social development will require socio-political institutions that can adapt to meet the challenges of globalisation.

Social sustainability in some ways, equates with ecological sustainability, and hence analogous to ecological limits, there are social constraints limiting development, and these are set by social norms (Chiu, 2003; Mitlin & Satterthwaite, 1996; Monroe, 1995; Munro, 1995). Thus to achieve ecological sustainability which is at the heart of sustainable development, the social structure, social values and norms must be changed so that they are conducive to the sustainability of the environment.

The consciousness and the willingness to live in an environmentally sustainable way will affect housing producers and related government organisations in many ways, for example, the choice of housing sites, the land use planning principles and intensity, the use of environmentally friendly design, building materials and construction methods, the attention to the livability of the property and the impact of the design on the physical quality of life of residents.
Construction and the Environment

The notions of a safe threshold and carrying capacity are important to avoid catastrophic ecosystem collapse. Ecological sustainability of a development activity can be inferred as the activity that acknowledges biophysical limits and the need to maintain essential ecological processes and life-support systems upon which all life depends (Zovanyi, 1998).

The materialistic culture has caused many housing consumers to continuously seek for bigger homes, ignoring the toll of residential activities on the natural environment. Housing consumers could adopt values which are protective towards the environment such as reductions in energy consumption, optimal use of green design and measures in-built to the property and most importantly, give preference and are willing to spend more to acquire housing which is built on environmentally friendly principles and which use green building materials.

An ecological dimension has to be added to the production and consumption processes of housing in order to apply the concepts and principles of environmental sustainability to housing (Bhatti, Brooke, & Gibson, 1994; Chiu, 2003; Rydin, 1992). The impact of the six stages of construction on the ecological system can be examined in order to steer housing development towards sustainability.

Figure 3: Impacts Arising From Each Construction Phase (Self –Developed)

Research Methodology

This study adopted the qualitative research techniques where questionnaires were used to collect data. A literature review was done in order to devise a framework for the research objectives, in particular to identify the elements of sustainable development. Then after, questionnaires were sent out to chart the level of awareness and also the implementation of sustainable development. The target questionnaire respondents were focused on Penang State, Malaysia. Ten housing projects with 50 respondents were the target group to acquire views and perceptions towards the sustainable development issues as well as to determine the significance and level of implementation of sustainable housing development.

The questionnaires adapted Likert’s scale of five ordinal measures of agreement. Ordinal scale 1 to 5 was used in ascending order to show the degree of agreement. A survey could cover a wide sample of population and housing
projects, overcome the generalization problems posed by the experimental & case design and provide the opportunity to analyse the quantitative data through statistical techniques (Luthans, 1992). In addition, comparisons with other studies adopting similar methodological approach could be made.

The collected data from the questionnaires was analysed via the Frequency analysis using Statistical Packages for Social Science (SPSS), version 15.0 to generate frequencies and percentages in the form of bar charts.

Data Analysis

![Figure 4: Understanding of Environmental Sustainability by the construction industry’s key players](image)

![Figure 5: Understanding of Economic Sustainability by the construction industry’s key players](image)

![Figure 6: Understanding of Social Sustainability by the construction industry’s key players](image)
The survey resulted in most of the key members understanding and being aware of the concept of sustainable housing development and perceives it to be important. The respondents felt that project managers, consultants and contractors should play the major roles in creating and implementing sustainable housing development instead of the clients themselves.

The rising number of sustainable housing development projects being built in Malaysia is a acceptance of sustainability concept among construction practitioners. However when it comes to implementation, it seems that key players in the housing industry are not sure whether or not they have ever considered and implemented sustainable elements into housing.
The respondents agreed that factors that contribute to environmental sustainability such as choice of site, energy efficiency, efficient waste management, water conservation, etc., are important. However, when it comes to implementation, few stated that they had implemented or taken into account environmental sustainability. Most of the key players were undecided or unaware on the effects of intense development on the local ecological system, energy efficiency, water conservation, proper sanitation and selection of environmental friendly building material.

The economic sustainability emphasizes on financial issues of housing affordability, life cycle cost, building life span by incorporating building maintenance aspects as well as opportunity to optimize existing infrastructure. Still, most key players have a preference for the housing property to have larger space and more facilities. On the contrary, sustainability in the housing context does not necessarily mean larger space and more facilities. This scenario reflects that they might not fully understand the total concept of this particular element in sustainable housing development.

As for social sustainability, it was found that for the housing industry, services such as public transport, shops, schools, work and recreational facilities and security to tenure are always provided. Elements of ease of accessibility, security to tenure and impacts of housing quality on physical and mental health of occupants are all perceived as important. However when it comes to implementation, elements such as; design aims for present and long-term use, better quality of housing and living environment, encouragement of social networks and social solidarity in neighbourhood, impact of housing quality on physical and mental health of occupants, were left undecided. This can be inferred as an unsure level of social sustainability implementation. From the analysis, it can be deduced that tenant participation is unlikely in practice. This implies the key players having a light consideration of tenant participation in housing design and management.

CONCLUSIONS

It can be deduced that the sustainable housing development concept is still quite new in Malaysia and few of housing project in Malaysia had really put to practice sustainable development. The demand for sustainability is perceived as “always there” but the implementation is very poor because there is lack of awareness among clients, consultants and contractors. The outcome of the survey could be reflecting the true scenario of the housing industry; where the understanding of the sustainable concept is there but levels of implementation on sustainable issues are not getting much attention though with the prevalent level of awareness.

Relevant suggestions to increase level of understanding the sustainable housing development concept such as encouraging all parties in industry to attend seminars and conduct brainstorming session can be proposed to get a better understanding of the subject matter. Existing laws and acts on sustainability could be reviewed and subsequently proper enforcement should be carried out to ensure success of implementation. The Government could play active roles by supporting and giving incentives in the form of Tax Rebates, fast plan approvals to developers who carry out sustainability practices. The level of understanding and awareness of sustainable housing development among construction key players need to be incorporated into the sustainable housing development issues in order to produce holistic results.

The outcome of this study suggests that there are few areas that could be explored for future research and development. The method of survey conducted in this research was specific and prepared for certain targeted respondents. In future research, a survey combining both personal interviews and questionnaire could be extended to a larger sized target respondent consisting of house buyers as well as key respondents to acquire better sampling findings that will give solid footing to a recommended course of action.
REFERENCES


