Governmental Incentive Instruments for Developing Energy Efficient Building: A comparative Study between Malaysia and Some Developed Countries

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Article history:
Received 12 October 2014
Received in revised form 26 December 2014
Accepted 1 January 2015
Available online 17 February 2015

Keywords:
Incentives, Building Energy Efficiency, Regulation, Government, Malaysia

ABSTRACT

Energy efficient buildings use less energy, have less effect on the environment and improve life quality for their users. Governments have enacted incentives to encourage construction firms to adopt sustainable construction practices. This study aims to investigate the current building energy efficiency (BEE) incentives in Malaysia, compare them with other developed countries and find out shortages of Malaysia incentive instruments. Data were collected by literature review in a comparative study and questionnaire surveys were distributed among the construction professionals in Malaysia. 432 questionnaires were randomly distributed construction firms in Malaysia from which 89 were returned. Descriptive analysis method was used to analyze the collected data. Data were analysed by SPSS version 17. Findings show that current incentive schemes in Malaysia are not effective as professional expected; therefore, they cannot attract construction firms for investing in energy efficient building development and prove the necessity of reviewing incentive programs.

INTRODUCTION

Construction industry effects the environment by using a great amount of natural resources. According to Environmental Protection Agency buildings consume 39% of total energy use, 12% of the total used water, 68% of entire electricity consumption and emit 38% of the carbon dioxide emissions [1, 2, 3, 4]. At the national level, improving the energy efficiency has been well-recognized by governments to meet the national energy conservation goals. These goals can be considered as expanding investment in energy efficiency, ameliorating the security of energy supply, decreasing of greenhouse gases and also costs of local environmental collaborated with energy supply and use. At an international level, energy efficiency leads to relieve climate change, reduce global warming and air pollution [5].

Government policy for promoting building energy efficiency (BEE) will receive support from both global and national levels indubitably. In order to meet the sustainable objectives and environment protection, governments have established the variety of policy instruments [6]. These policies could be divided into two main categories: incentive instruments and regulatory instruments [7]. Incentive instrument is going to set specific criteria to support environmental friendly actions. It is more a performance-based necessity and flexible for the influencing firms to make decisions in order to adapt their performances with management measures. Therefore, the affected party usually has an option dependent on the current firms’ situation. Incentive instrument could be considered as a voluntary approach; however, it is required under the law. Economists state that incentive instruments are more cost effective compared to regulatory instrument because the affected parties have more chance to create the most cost effective solution [8, 9].

Comparative Study of Building Energy Efficiency (BEE) Incentive Instruments in Different Countries:

Tangible and intangible incentives increase competition among the companies which are working on energy efficient building. Increasing the competition among companies will lead to energy efficient building quality, price reduction and extend the BEE market. According to the literature reviews [10, 11, 12, 13, 14, 15, 16, 17]:

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United Kingdom was the first country that had launched a green building rating system in early of the 90s, in addition, provides financial incentives such as Grant, Rebate, Tax exemption and Green Deal program to develop BEE and green building.

U.S provides the widest range of incentives for BEE development at Federal, State and local levels.

In Canada, the government has introduced three main incentives include tax, grant and loan programs in order to promote BEE market and encourage investors to invest in this field.

In January 2009, Malaysia Green Building Index (GBI) was started at the Green Design Forum and organized by the Architectural Association of Malaysia (PAM). The Malaysian construction industry identified necessity green rating tool to improve and adapt itself to the tropical climate. GBI has been designed based on another international rating system such as BREEAM (Building Research Establishment Environmental Assessment Method); USA’s LEED (Leadership in Energy and Environmental Design) has been evaluated to be adopted with Malaysia climate conditions [18, 19]. Malaysia government has introduced two main incentives such as Tax exemption and Stamp Duty.

**Data Analysis and Finding:**

The survey was conducted where 432 sets of questionnaires were sent out, 89 sets were returned (20.60%). Descriptive analysis method was used to analyze the collected data. Data were analysed by SPSS version 17.

**Part 1: Should government encourage Building Energy Efficiency development by financial instruments?**

The majority of respondents were from private sector companies. Higher upfront cost is the main obstacle of the BEE development [20, 21]. Consequently, developers who are going to enter BEE development need government financial support to recoup higher initial investment. A significant barrier for green development is that developers must provide up-front financing for new design, technology, and construction method. This situation prevents developers to apply more energy efficient opportunity in their projects as it is hard for them to recoup upfront cost. 68% of respondents stated that BEE development had needed government financial supports, otherwise BEE market cannot be appealing for the private sectors because of higher initial investment. Governmental financial incentives have essential rules to provide low risk and affordable financial resources for green developers in both commercial and residential sectors.

**Part 2: Is GBI (Green Building Index) as a local voluntary rating system successful to promote BEE in Malaysia?**

Based on the results, respondents stated that the GBI rating system was successful to promote BEE among the developers and construction professionals. This result approves the necessity of rating system for developing green building at the national level. At the same time, 41% of respondent acknowledged that GBI was not so successful in supporting BEE development; therefore, it needs to review and evaluate GBI to be adopted with new conditions.

**Part 3: Are current incentives effective and efficient to support BEE development at national level?**

According to the comparative study conducted at the literature review [10, 12, 15, 19, 20, 22] different governments have launched various incentives to promote BEE in their countries. The finding shows that, the majority of respondents believed that current incentives were not effective to attract construction firms to enter BEE development. In addition, financial incentives are not able to recoup the high upfront cost of green buildings and make it more affordable.

**Part 4: In this question, respondents were asked to rate the level of importance below incentives for BEE development:**

The results show that, the most of respondents believed that low interest or mortgage loan had been the most important incentives for BEE development. At next positions, tax incentives and voluntary rating system were chosen by respondents and less important and effective incentives from the respondents’ point of view was market and technology assistance which might be provided by government.

**Conclusion and Recommendation:**

In Malaysia green and energy efficient building costs are 3-15% higher than conventional non-green buildings [23, 24, 25]. This situation applies more effort from government to create appropriate incentives to support construction companies.

<table>
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<tr>
<th>Table 1: Current incentive scheme resulted from a comparative study.</th>
<th>Incentives</th>
<th>The UK</th>
<th>The US</th>
<th>Canada</th>
<th>Malaysia</th>
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<tbody>
<tr>
<td>Structural Incentives</td>
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<td>✓</td>
<td>✓</td>
<td></td>
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<tr>
<td>Subsidy and Rebate programme</td>
<td>✓</td>
<td>✓</td>
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<td>Tax Incentive Scheme</td>
<td>✓</td>
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The results from questionnaires and literature review show that incentives in Malaysia are not so effective to attract construction companies and efficient to develop BEE. The majority of professionals believed that current incentive schemes need fundamental review and government should create new incentives. Current incentive scheme in Malaysia includes Tax exemption and stamp duty which are not effective enough to promote BEE in the country; therefore, there is a need to develop more effective and attractive incentive programs. Results regarding and literature review, Malaysia government should create new incentives including low interest/ mortgage loans, structural incentives and Market and Technology Assistance to better support for BEE development.

ACKNOWLEDGEMENT

This work was supported in part by the Fellowship Scheme of Universiti Sains Malaysia.

REFERENCES


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<td>Low interest/ mortgage loan</td>
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<td>Market and Technology Assistance</td>
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