Determining Critical Success Factors Related To Client in Low Carbon Construction: A Review

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Abstract

Malaysia has signed the Kyoto Protocol on climate change with United Nation to restrain the rapid increase of carbon dioxide emissions. Malaysia has also established several national policies related to renewable energy as an initial step towards embracing sustainable development. However, not much had been done to determine the critical success factors of low carbon construction related to client in Malaysia as client plays an important role in achieving success in low carbon related project. This study attempts to review the literatures in relation to critical success factors of low carbon construction and client. Previous studies conducted by researchers had revealed that there are four groups of critical success factors related to client for low carbon construction which are competency of client, level of commitment of client towards project, level of acceptance of client regarding final result of project and effectiveness of client involvement in planning and production phase of project.

INTRODUCTION

Malaysia started to embrace the sustainable development in the country since the launched of National Energy Policy in the year 1979 were considered as initial effort to curb emission of carbon dioxide which contributed from the energy sector [1]. As further steps towards sustainable development, Malaysia also joined the United Nation Framework on Climate Change in July 1994 and further ratified the Kyoto Protocol on 4 September 2002 [2]. Malaysia geared in greater stage on sustainable and green development since the introduction of Malaysia’s first green building tool named Green Building Index in the year 2009. Aligned with national policy, Green Building Index Sdn Bhd stated to issue green certification in the country since the introduction of Malaysia’s first green building tool named Green Building Index in the year 2009. Aligned with national policy, Green Building Index Sdn Bhd stated to issue green certification in the country since the introduced Malaysia’s first green building tool named Green Building Index in the year 2009.

The objective of this paper is to identify critical success factors related to client which will ensure the success of low carbon construction

Sustainable Development in Malaysia:

Malaysia launched its green rating tool named Green Building Index in 2009 as par as other green rating schemes across the world such as Green Star, LEED and BREEAM system to certify and monitor the green development in building construction. According to Green Building Index Sdn Bhd (2014), as of 15 August 2014, there are total of 243 building certified as green buildings in Malaysia. The Malaysian government also established several low carbon cities such as Iskandar Development Region, Cyberjaya and Putrajaya. Putrajaya which covers total area of 11319.8 acres has allocated 5.3%, 2.9% and 25.5% to government, commercial and residential land use respectively. The construction of Putrajaya started in October 1996 and well equipped with fundamental low carbon facilities such as environmental friendly transport system, broadband width with global multimedia communication platform, smart hospital, school and many more [5].

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While, Cyberjaya also become the first city equipped with closed circuit camera connected to the Malaysia Emergency and Response System. Wisma Shell which located in Cyberjaya was accredited with the Leadership in Energy and Environmental Design (LEED) Gold [3]. Iskandar Region Development which covers 2216.3km² was started to develop by the government in the year 2006 by allocation of RM4.3 billion. Total amount of GDP for Iskandar Region Development is about USD20 billion in the year 2005 where estimated around 60% of total GDP of Johor which estimated around USD33.4 billion. Iskandar Region Development also consists of state of art telecommunication infrastructures, efficient public transportation, modern airport, world class transhipment ports and many other attractive facilities [6].

Sustainable Development Globally:

Countries such as Australia, United Kingdom, India and China have started to emphasize the important of low carbon and sustainable development in their daily routine. Australia have taken step towards sustainable development by pledging 20% of national energy on renewable energy source by the year 2020, establishment of green rating tool and enforcement of companies to buy carbon tax by launching of Australian Carbon Tax [12]. While United Kingdom also taken sufficient corrective action towards sustainable development by reduction of carbon emission to 26% by year 2020 and establishment of BREEAM assessment system for green buildings (Innovation and Growth Team from UK Construction Industry, 2010). Developing countries such as India and China also played their roles in sustainable development where China established own green rating tool named Three Star Rating in the year 2011 and India created several low carbon cities such as Bhopal city which have annual energy growth rate of 10% and reduction of 40% of greenhouse gases by the year 2035 [14].

Factor Related to Client:

Factors related to client referring to critical success factor originated through client in a project which may influence the success of low carbon construction. There are total of 4 numbers of critical success factors identified by authors grouped into factors related to client which are:

i) Competent Client
ii) Committed Client
iii) Level of Acceptance of Client
iv) Level of Effectiveness of Client

(i) Competent Client:

Iyer and Jha [7] have elaborated that client competence as one of the critical success factors for accomplishing project with great success. The client needs to be competent in overall stages of green construction by being aware about the technical detail in progress of project from initial stage to completion of construction.

(ii) Committed Client:

Commitment from the client is one of the important factors required to achieve success in green construction as mentioned by Enanche-Pommer and Horman [10]. Client need to be committed about the green project undertaken by builders as involves greater obstacles compare to conventional project until handed over to them. Pull over in middle of project need to be avoided to ensure project success.

(iii) Level of Acceptance of Client:

Builders need to ensure of high quality aspect for green building as green building which constructed required level of high quality during construction process [11]. Besides that level of acceptance of final product by client need to be identified in initial stage to avoid any argument regarding standard of construction quality between client and builders. Besides that, Pinto and Slevin [8] also agreed that willingness of client to accept final low carbon or green project as one of critical success for construction activities.

(iv) Level of Effectiveness of Client:

While, Munns and Bjeirmi [9] said that, for a project to become successful, client of the project need to be effective by involving deeper in the planning and production stage of the low carbon and green project. Awareness of planning and production stage of the project by the client may improve the overall production stage in construction by clearing hurdles and obstacles faced by project team.

Discussion and Recommendations:

Low carbon and sustainable development started to gain popularity among construction developers in Malaysia and across the developed countries. Identification of critical success factors related to client in low carbon construction is important and ensures great success to green construction as client will decide the final result of project during handing over of construction project after completion.
Table 1: List of critical success factors in low carbon construction related to client from previous literature

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Figures 1 illustrates theoretical relationship the list of critical success factors and success of low carbon construction. After the literature review have been examined, identified, selected and synthesized. The factors are represented by these variables: (1) competent client, (2) committed client (3) level of acceptance of client (4) level of effectiveness of client.

Success for Low Carbon Construction

- Competent Client
- Committed Client
- Level of Acceptance of Client
- Level of Effectiveness of Client

**Conclusion:**

Although Malaysia still in initial stage in low carbon and sustainable development, the government have taken sufficient steps and initiative in improving the progress of sustainable and low carbon development in the country by establishment of environmental policies, green rating tools and development of low carbon cities across the country. This study suggest that identification of critical success factors related to client may guide the developers to construct low carbon and green building favouring client which may decide the success of green and low carbon construction in overall stage of construction.

**REFERENCES**


