TECHNICAL NOTE

TOWARDS IMPLEMENTATION AND ACHIEVEMENT OF CONSTRUCTION AND ENVIRONMENTAL QUALITY IN THE MALAYSIAN CONSTRUCTION INDUSTRY

Sim Yeong Liang*, Frederik Josep Putuhena, Law Puong Ling & Azhaili Baharun

Department of Civil Engineering, Faculty of Engineering, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia

*Corresponding Author: *captivesim@yahoo.com*

Abstract: The purpose of this paper is to identify mechanisms and approaches involved in the local construction individuals and companies to enhance environmental concerns and the adoption of interdisciplinary method of managing the environment and up keeping of the quality in Malaysian Construction Industry. This paper describes an innovative approach to understanding the role of internal and external influence through LEGO concept. This approach builds on theories of environmental issues, in which learning about new ideas, practices or technologies occurs through integration of efforts particularly from the government. The approach also analyses the challenges faced by construction stakeholders. It draws on findings from different studies including some other countries of sustainability in which the engagement of previous research has been incorporated to speed up the environmental sustainability in Malaysia. Environmental sustainable development construction requires a holistic thinking and decision making and more innovative solutions that enhance sustainability and result in mutually benefited outcomes for all stakeholders. A dedicated effort especially government and government link company is in strong demand. This integrated achievement boosts the awareness and action among stakeholders. The role of government and leaders has been cited as an important component towards of environmental sustainability. Development of the approach will contribute to the understanding of environmental sustainability through identifying gaps in the understanding and pursuit of sustainability in the Malaysian construction industry. This paper suggests the future prospect that integrates several dimensions towards sustainability practice in Malaysia.

Keywords: *Sustainability, green construction, green assessment, Environmental management, Malaysia*

1.0 Introduction

Early days of environmental management has taken many challenges on rigid and skeptical organization as they view it as added cost and time rather than improvement

opportunity, since then Green Management has embarked in the Malaysian construction industry as a means to expedite quality and product for the clients who are environmentally concerned towards sustainability. Various initiatives and methods have been studied, such as trial testing some of the latest and most advanced management tools and assessment methods. Through the collaboration of private sectors and Malaysian's construction pioneer – Construction Industry Development Board (CIDB) Malaysia, several sustainability methods have been used both locally and internationally, to meet the demands of the local construction market for uplifting the standard up as par with those of the developed country.

However, evidently, it is noted that the quality and its standards in the Malaysian construction industry has consistently remained as the root for many construction performance dismal and thus jeopardized the environment. Whether or not current initiatives of assessment/management system have sufficiently catered for quality and environment remains a question. If the "one-size fits all" postulate does not hold especially when it comes to ensuring sustainability on project, the question of validity and effectiveness of abovementioned method becomes a pertinent one. This paper presents a review of various government efforts and investigation into the main problems that hinder its success. Experts opinion within this field are sought as well in order to improve the robustness of this study. This paper also suggests the role of project stakeholders in provision to the current practice, where necessary, within the study.

The earth is going for green. In Malaysia, it appears to start getting this message and is no way behind in this matter. Issues of sustainability have been duly highlighted in the Construction Industry. However, the general perception of the construction industry is it channels more environmental degradation. Sustainability or green management has been the main discussed topic among construction industry players nowadays. Sustainability in the construction and building sector is best achieved by actively pursuing a holistic approach that strives to strike a balance between the environment and the economy whilst maintaining a healthy consideration for the social needs of humanity.

The concern for environmental and its movement had been underway since 1970s in the United States. Malaysia in fact, is one of the earliest nations in the world to have adopted a serious concern towards our environment by enacting the Environment Quality Act way back in 1974. Recently, the honourable Prime Minister of Malaysia in his speech at the *United Nations Framework on Climate Change Conference (Copenhagen Summit)* has stated the commitment of Malaysia to reduce the carbon dioxide emission by as much as 40% compared to 2005 levels. As a result, the Malaysian government is working on the *Green Technology Roadmap* to guide Malaysia in becoming a low carbon green growth economy.

For a start, the government is conducting a baseline study for green technology in Malaysia. The baseline study is comprise of the following sectors; energy, waste water, building, transportation, manufacturing and ICT. (Hamid *et al.*, 2011) The first few years of the new journey is the toughest part. The Malaysian government has taken many serious and proactive efforts in creating awareness in the industry and we had seen in the last 3 years a monumental change. As many construction players start to take proactive action despite much speculation in the early days and this is of great encouragement. What had been done earlier has been paid off but this is just at a very infant stage of embarking into a successful green management.

As construction is an impetus to the Malaysian economy, the CIDB sets up to standardize and modernize the construction industry. She has also put in effort to create awareness among the industry players by organizing a dozens of international conferences and local seminars each year, such as International Construction Week 2012 at Borneo Convention Center, has drawn thousands of stakeholder and international attention. This shows the attentiveness of industry to this matter of sustainability construction.

In addition, the building and construction sector is projected to continue on its uptrend and is expected to grow by 7% in 2012. This was announced by the Prime Minister of Malaysia in the 2012 Budgetary Meeting. The Foreign Direct Investments which for the first 6 months of this year had reached RM21.2bil. In 2012, private investment is forecast to climb 15.9% supported by foreign and domestic investment. The Malaysian GDP is forecast to be between 5% and 6% in 2012. (Green Building Asia, 2012)

Besides, the Country Master Plan (2005 – 2015) is of significant importance for the Malaysian construction industry (CIMP 2006-2015). The Malaysian Green Building Index (GBI) has been developed recently by Association of Consulting Engineers Malaysia (ACEM) and Pertubuhan Arkitek Malaysia (PAM) to promote sustainability in built environment. The introduction of the rating and assessment system provides new challenges for the industry players in building construction. (*Kamar et al., 2010)*

2.0 LEGO™ Concept

In recent years, with the growing volume of international trade, customers have had a wider choice of products and services from around the world. Wider choices have elevated quality and environmental requirements and pose another new challenge. In this dynamic and competitive marketplace, companies are under tremendous pressure to become more customers orientated and more cost effective and to continuous improve quality. There is a need for quality management system that is ease of use, adaptable, flexible and most importantly towards green concept environment. Current literatures are just insufficient, weak and poor. While the traditional regulatory approach certainly

has a role to play in promoting corporate greening, scholars have come to acknowledge its inefficiencies and recognize its difficulty when harmonizing enforcement across time and place (Lyon and Maxwell, 2004).

The begetting of project management as identified in PMBOK (Project Management Body of Knowledge) in terms of quality management are planning, performing and controlling. Each one of this element is a process that can contribute to a successful green management. Planning is process of identifying quality requirements and/or standards for the project and its deliverables and documenting how the project will demonstrate compliance with quality requirements. Performing is a process of auditing the quality requirements and the results from quality control measurements to ensure that appropriate quality standards and operational definitions are used. Controlling is the process of monitoring and recording results of executing the quality activities to assess performance and recommend necessary changes.

Thus, the 'LEGO' concept will address the idea above. Nowadays, the most famous toys around the globe is 'LEGO', every child loves it. It can be described as Childrens' heaven. Even in Malaysia we have constructed 'LEGOLAND' as a theme park. The word "Lego", which is from Danish, means "play well". The LEGO concept is easy - a combination of many little blocks to form a structure- car, rocket, airplane, ships or building. Lego pieces can fit together in myriad ways, which is one of the main reasons for the toy's success. These little shaped blocks can be illustrated as the external elements constitute the environmental management system. Each particular brick signify one element (Figure 1), whilst the colour of Lego will represent the intrinsic elements.

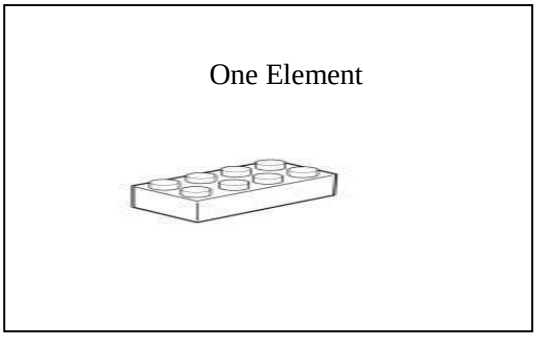

Figure 1: Lego Element

To further elaborate, the way to build up a LEGO is relatively easy and flexible. Each of the components of LEGO will represent one item in the construction project management system. The marvel of LEGO is its characteristic of impermanency. After completing a structure, any block (element) that is being taken away will not affect the

structure. The structure still can stand firm by itself. The same situation applied to construction systems towards sustainability. There is no one definite system, any elements within quality and environmental system are changeable and flexible and it varies due to different background and the volatile nature of the industry as it is not permanent. This illustrates the need for the matching interdisciplinary method of managing quality and environment towards sustainability. The point is current project management system including literatures of quality concept are too rigid and inflexible, therefore, an adaptive yet flexible model needed to solve this problem. This is the underlying thought of the whole study. There is an urgent need in construction project management towards the fullness of quality and environmental management. Lack of awareness will result in dismal project performance.

3.0 Concept of Sustainability

Swanson and Zhang (2012) defined sustainable development at an organizational level means different things to different people. Some simply view sustainability as ensuring their organizations are financially self-sufficient so they can continue to exist. According to some research, it is likely these individuals are also the least knowledgeable about sustainability. Some organizations have a singular focus on another purpose, such as environmental advocacy instead of financial self-sufficiency. Both of these examples describe organizations that fit into the focused mission sustainability category of the organizational sustainability taxonomy.

Following an interview carried out by Malaysia CIDB information portal 1Bina.my, the General Manager of CIDB Construction Technology Development and Innovation department, Ir Elias Ismail explained that there are two main issues that prompted the world to turn to green technology which are the changes in global climate and the continuity of the construction in the future. Many countries including Malaysia are now trying to make green technology as a back bone behind every development agenda in the future. (CIDB, 2011)

Many efforts have been imparted into green management in the Project Management. Since the adoption of ISO 14001, which exists to help organizations minimize how their operations impact the environment and comply with applicable laws, the subject of sustainability through project management had remained nebulous at best as there had been a lack of continuity among organizations who desire to use project management as the mechanism to impart change. (Green Project Management, 2012)

In Malaysia, many projects are getting green assessment and are operating to streamline and promote the practicality of green management to decrease negative impact on environment and to increase preservation of our mother earth. Francescato (2012) defined sustainability often refer to green industries, such as companies that promote

renewable energy or electric vehicles For the sake of this review, we would minimize the scope to any project that can be run in a more sustainable manner.

Maltzman and Shirley (2012) noted project management is already concerned with reducing costs, increasing value, and protecting scarce resources – all practices that fit nicely with being green. According to Ministry of Energy, Green Technology and Water (KeTTHA), Malaysian national green technology policy objectives includes

- To reduce the energy usage rate and at the same time increase economic growth;
- To facilitate the growth of the Green Technology industry and enhance its contribution to the national economy;
- To increase national capability and capacity for innovation in Green Technology development and enhance Malaysia's competitiveness in Green Technology in the global arena;
- To ensure sustainable development and conserve the environment for future generations; and
- To enhance public education and awareness on Green Technology and encourage its widespread use.

4.0 Awareness

In order to attain a greater environmental excellence in the move towards sustainable business operations, organisations must make more use of their staff, adopting participatory management structures and processes to unlock ideas, innovation and creativity (Beard and Rees, 2000). Moving forwards toward environmental sustainability is not without its' obstacles and Malaysia certainly faces a strong share of challenges lying ahead. In the long term, the policies of developing countries aim to achieve high levels of development across its' multi-dimensions. At the institutional level, countries are led by groups of elected officials and by appointed administrators. This results in power being derived from the electorate, from the competence of administrators and from the strength of state institutions (Lameirra *et al.*, 2012). Globally, markets are witnessing an accelerated uptake of green technology and eco products. The enthusiasm of the populace is further complemented by the government's policies and regulations, such as the Feed in Tariff scheme (FiT) which is managed by the Sustainable Energy Development Authority (SEDA), a statutory body under KeTTHA.

Businesses must manifest the intelligent alignment to harness the many green opportunities arising from the various policies and public demand. 3rd International Greentech & Eco Products Exhibition & Conference Malaysia (IGEM 2012) organised by KeTTHA aims to help push the rapid adoption of green technology to deliver a double impact of sustainable economic growth as well as to address the environmental

and energy security issues (IGEM, 2012).

It may be wise to look at how other developed country master plan is towards sustainability and environmental management. Total Quality Environmental Management (TQEM) seeks to utilize the various elements of total quality management (TQM) to help manage environmental programs. TQEM, like ISO 14001, is considered an environmental management system (Wever, 1996). Zhu *et al*. (2013) found out that both developing countries with significant environmental concerns such as China as well as foreign suppliers and partners should encourage and support ISO 9000 implementations by local firms since such implementation would provide an excellent stepping stone not only to improve business performance that are the conventional expectations from such investments but also to better environmental performance. In Hong Kong, a suite of standardized green specifications is not yet available but the government has been investing its effort in sustainable development since 1999 (SDU, 2007).

Besides, many organizations implement EMS voluntarily in Hong Kong. Since the government is committed to sustainable development and a large number of companies have obtained ISO 14001 certification, Hong Kong would be a suitable economic centre in which green specifications may be introduced to further green objectives in the construction sector. The results arising from this study in Hong Kong should also be useful for other developed cities or economies which aspire to sustainable construction through contractual means. (Patrick *et al.*, 2011)

In contrast, the applications of environmental measures are limited. Shen *et al.* (2006) discussed the typical causes contributing to the limitation include the clash between cost and environment, environmentally passive culture within construction industry, lack of cooperation among project parties, and clash between contract time and implementing environmental management methods. These are exactly the true picture of Malaysian construction industry's hindrances. Furthermore, the practice of environment management is mainly driven by external impetus such as legal enforcement incentive programmes from government. However, the effectiveness cannot be gained if internal motivation does not exist. The lack of awareness among construction industry had been very disheartening.

Under the Economic Transformation Programme (ETP) and the 10th Malaysia Plan, the Malaysian construction industry will become an important sector in providing infrastructure and buildings for other sectors to grow. Therefore, awareness in green and sustainable issues are needed so, all the developments of infrastructure and building as stipulated in these plans address the issues of green and sustainability.

Under Budget 2010, the Malaysian government provides effective financial incentives through Green Technology Financial Scheme (GTFS) in the amount of RM 1.5 billion

to explore green technology and adopt green practices. This fund will provide soft loans to companies that supply and utilise green technology. As a sign of commitment, the Government will bear 2% of the total interest/profit rate. In addition, the Government will provide a guarantee of 60% on the financing amount via Credit Guarantee Corporation Malaysia Berhad (CGC), with the remaining 40% financing risk to be borne by participating financial institutions (PFIs).

For suppliers, the maximum financing is RM 50 million and for consumers and companies RM 10 million. In addition, the government is also considering tax incentives such as tax deduction for contribution towards environmental funds and tax breaks for buildings and designs that work harmoniously with nature. (Hamid *et al*. 2011) Although green financing has not taken off in a big way in Malaysia compared with developed countries, it has been gaining prominence.

Over the past few years, environmental management has gradually developed into a more mature discipline. Many companies have started to incorporated environmental considerations into their activities in order to eliminate or reduce the impact of these activities on the natural environment. The main question is, however, whether top management perceives environmental initiatives as a challenge leading to new strategic options and, eventually, increased competitiveness, or whether they regard it as yet another burden.

Currently, the government of Malaysia fails to regulate and enforce due to the lack of a legislative framework specifically for green technology or green growth. Thus, construction industry is unable to apply the carrot and stick principle and reach industries/people at all levels. These issues need to be addressed to ensure successful adoption in the future.

5.0 Initiatives

The definition of corporate environmental responsibility given by Jamison *et al*. (2005) takes into account environmental commitment, whereby the company fully embraces sustainability and has a net positive impact on environment and society. There are broad rooms of improvement in the light of environmental degradation in the whole world. We have to take holistic and synergistic approach. In view of economical and technology scale, sustainability is still far beyond reach of most household. However, it has to be carried out in different phases throughout the entire project management life cycle. Jones *et al*. (2013) viewed environmental management as the control of all human activities that have significant impact on the environment but not the degree of control exercised, the approach taken, or the effectiveness of that control.

In addition, a major driver of corporate environmentalism is competitive market pressure. The growing recognition by many business leaders of the importance of environmental protection to their international competitive advantage has led to new rounds of proactive voluntary standards emphasizing the integration of environmental management and corporate strategy (Malarvizhi and Yadav, 2008). As part of corporate strategy, government policies have been recognised as important instruments in driving the market for sustainable buildings. In Malaysia, there is currently no policy which mandates a sustainable building. So basically it's up to individual to take approaches towards sustainability. This can be done through public awareness programme to educate the importance of sustainability.

In tackling all related green issues. In 2009 Malaysia launched its version of green assessment naming Green Building Index (GBI). This is an excellent piece of Lego which incorporated into the initiatives framework. Although the country's green building industry is still in its early stages of development, many key participants in the country's real estate sector starting to recognise that they have a responsibility to adopt building sustainability practices and technologies in order to play a role in climate change mitigation.

The emphasis on creating green or environmentally-friendly buildings was also highlighted during the launch of GBI by the Minister of Works and shows the commitment from the construction industry especially from organisations like Association of Consulting Engineers Malaysia (ACEM) and Pertubuhan Arkitek Malaysia (PAM). (The Ingenieur, 2009) The GBI has been modeled according to international green building systems such as USA's LEED (Leadership in Energy and Environmental Design) and BREEAM (Building Research Establishment Environmental Assessment Method). The latter has been used in more than fifty countries worldwide.

Many researchers have pointed out that green building assessment system should be adjusted according to the background of a certain country and region. Cooper (1999) contends that such current international attempts at developing a universal, standardized method for assessing the environmental performance of buildings are inherently flawed. He argues that such methods are found wanting in that they are culturally implicit, and that such methods or tools "treat the sustainability [of the] wider built environment as simply a matter of energy and mass flows without due regard to the socio-economic and political dimensions of sustainability" (Cooper, 1999).

CIDB Malaysia will soon introduce a Green PASS rating to contractors and developers in the country. Green PASS is an assessment that measures the actual impact of the quantity of greenhouse gas (GHG) by released by building to the environment. This evaluation will be done in two phases: construction phase and operational phase of the building. CIDB previously issued the Construction Industry Standard CIS 19:2012 Draft

and requested the public to provide feedback on the Green Performance Assessment System in Construction (Green PASS) draft. By July 2012, CIDB will work with the Malaysian Green Tech Corporation (MGTC) and several government agencies to test the effectiveness of the Green PASS assessment to construction projects in Malaysia through a pilot project that has been agreed (National Construction Portal, 2012). The latter is to access the practicality working together with the industry.

Top management commitment will only happen if top managers understand the significance of adopting an EMS for their organisation. Educating themselves about environmental issues is the first step (Zutshi and Sohal, 2004). All projects affect the environment somehow, and a project manager can help mitigate by considering the environmental effects of the project and also of the product resulting from the project. Thus, a shift in thinking is required. As project managers, they must think beyond the confines of projects to consider the entire life cycle of a product resulting from their project and the project's sponsor and beyond.

Maltzman and Shirley (2010) are quick to point out that sustainable practices are good for business. Understanding the green aspects of a project better equips project managers to identify and mitigate risks.

- Running a project with green intent helps teams not only do the right thing but also do things right for the business.
- Adopting an environmental strategy increases the chances for success of the product and the project.
- Viewing projects through an environmental lens both encourages long-term thinking and allows the project to take advantage of the current "green wave."
- In addition to expanding our thinking, Maltzman and Shirley encourage project managers to do the following: Be a change agent. This shouldn't be a stretch, since every project is about change or it wouldn't happen at all.
- Connect our organization's Environmental Management Plan to our project's objectives — and if there is no EMP, create or help create one.

Besides, there is a need to ensure that both quality and sustainability ("greenality") are built in to our thinking about a project, rather than bolted on as an afterthought.

For attaining better future, the government of Malaysia is in the midst of integrating green topics in the national education system and increase modules and courses related to green technology in institutes of higher education in both public and private institutions. Further, the government creates green jobs roadmap through integrating skills training standard in National Competency Standards (NCS) and National Occupational Skills Standards (NOSS). Green ICT Working Group has been set up under The Malaysian Technical Standards Forum Berhad to actively promote the Green ICT concept in relation to the ICT industry, to set up a minimum Green ICT guideline

that can be used across industries and to continuously seek to establish a sustainable ICT industry through eco-friendly technology (Hamid *et al*. 2011). All these initiatives are Lego pieces that fit together.

6.0 Influences and Challenges

In the past several years, environmental forces such as consumer boycotts, dynamic preferences, and new customer requirements have affected basic business strategies as well as corporate core values (Bhushan and MacKenzie, 1994) For example, there is a huge gape in technology advancement. There is still high level of dependency on green technology from developed countries. In view of the amount of sunlight we have in Malaysia, the usage of solar is still limited due to the colossal cost involved.

The main thrust of the sustainability in construction is encapsulated in three triangle of classic construction management, which target namely time management, cost management and quality management, but the aspect of project management isn't just about the triangle of but further reaching to safety management and green management. Each of these do not stand alone, as implied through LEGO concept, it dynamically complement with the other elements, which is pertinent to be part of the holistic structure for sustainable construction that considers safety, security, environmental and health in construction as seen in Figure 2. With the technology advancement and competitive environment striving for excellence, creating a positive balance of interaction between all aspects is paramount.

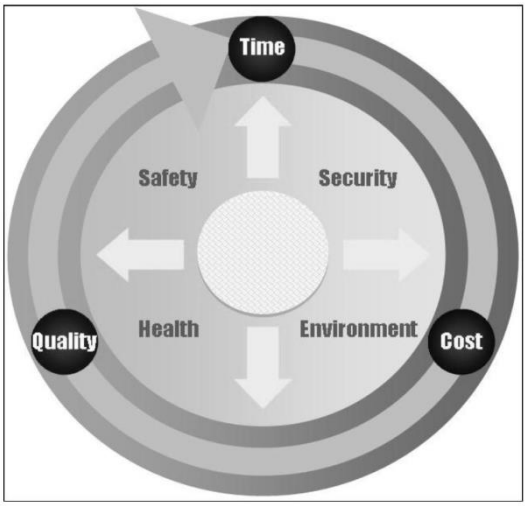

Figure 2 : Holistic structure for sustainable construction (CREAM, 2012)

However, there are several challenges in adopting green technologies in construction. The challenges are lack of skill and capacity in this area, overlapping of roles among the government agencies, slow industry follow through on government programs, lack of research and innovation, lack of understanding of environmental implications and its solutions and cost versus benefits in term of implementation of green technology. The abovementioned obstacles is just like each player of LEGO able to build but not able to come out with vivid result. The barriers are also related to law and regulation. Currently, the government of Malaysia fails to regulate and enforce due to the lack of a legislative framework specifically for green technology or green growth.

Thus, the aim is to apply the carrot and stick principle and reach industries/people at all levels. These issues need to be addressed to ensure successful adoption in the future (Hamid *et al*., 2011). Zutsha and Sohal (2004) highlighted the importance of communication. Two-way communication between the organization and its internal and external stakeholders is the fundamental basis for the successful implementation and maintenance environmental sustainability. This is conceived as the bridge between two blocks of LEGO that interconnect each other. Despite the afore-mentioned challenges, this empirical study can contribute to literature on environmental development in public sector by providing a snapshot of the current state of the environmental development practices in the Malaysian construction sector.

7.0 The Way Ahead

Finally, the paper suggests a need to develop the aptitude of the various actors involved in such projects in order to successfully bring them to market. Such review above suggests the industries are maturely ready to accept green management as part of their company measures to fill gap in sustainability.

Yeo and Quazi (2006) identified and analyses seven critical factors towards environmental management in Singapore. It aims to develop and validate a set of critical factors of environmental management that could be used by the managers in assessing and improving their own environmental management practices. Integration between top management commitment, employee empowerment, rewards, feedback and review are equally important to gauge environmental performance.

In Singapore, an exploratory study has been carried out to examine the extent to which seven global companies integrated their environmental practices with the overall strategic plan. Literature indicates the importance of such integration but no definite guidelines are available as to how the level of integration should be analysed or assessed. Literature also indicates that a number of leading companies have been successful in integrating environmental practices with their respective strategic plan (Quazi, 2001). The suggestions for managers on implementing core concepts, in addition to the challenges they may encounter can be discussed in future articles.

KeTTHA suggested 5 strategic thrusts as below. Thrust 1: Strengthen the institutional Frameworks Strategic Thrust 2: Provide conducive environment for GT Development Strategic Thrust 3: Intensify human capital development in GT Strategic Thrust 4: Intensify GT Research and Innovation Strategic Thrust 5: Promotion and public awareness. At present, there is no evidence of successive implementation of above thrust as this is a new approach apart from environmental management (ISO 14000) that exists. KeTTHA are now implementing such thrust in a few pilot projects. A successful result with many active implication can influence top management to follow such thrust as currently there are too much of speculations among industry players.

The below are a few recommendations to create constructive awareness and actions in sustainable construction and green buildings in Malaysia. Albeit just a few, but it is good enough for the usage of the near future. All project stakeholder need to work hand in hand to yield success. Hamid *et al*. (2011) suggested the following:

- To further incorporate and applies innovation in construction in the form of Industrialised Building System (IBS).
- The introduction and adoption of while whole life cycle costing and green procurement in construction industry is important way forward.
- Environmental considerations will be integrated into all stages of development, programme planning and implementation and all aspects of policy making.
- Human capital development is one of the important elements that need to be taken onboard.
- Research and innovation is the best way to improve and expand knowledge and technology. The government should increase grant allocation on the research related to sustainable and green construction and encourage research cluster on green issues.

Integrated and effective cooperation and coordination among government and other sectors shall be enhanced in order to achieve efficient environmental management and protection.

The integration of the above dimension can influence the environmental practices in organization. In addition, it may be assumed that employees actively involved in environmental endeavors may significantly enhance a company's chance for superior environmental performance. Employees who feel empowered to make changes for environmental efficiencies may provide opportunities for improvement to the product and reduce waste. This should lead to a greener product and green savings from waste elimination. These efficiencies should also, in some way, either indirectly or directly, increase customer satisfaction. Many customers today are specifically asking their suppliers to adopt environmental standards. (Nalini, 2004)

Zutshi and Sohal (2004) identified four critical success factors for EMS adoption and maintenance in Australia which are Management leadership and support; Learning and training; Internal analysis; and Sustainability. The majority of the critical success factors identified is general in nature and accordingly can be used by any organisation, regardless of its size, sector or nature of the business. Future researchers in Malaysia can go in depth into some of these success factors.

8.0 Conclusion

As a conclusion, many of the Lego pieces as the elements towards sustainability has been discussed in this research. Given the importance of these relationships towards environmental sustainability, it is vital that all parties abovementioned be concern with promoting interdisciplinary method of managing the environment and up keeping of quality. The manifestation of sustainable and built environment is correlated to one another through LEGO Concept. Hopefully through each of LEGO block shape (extrinsic factors) such as National Green Technology Policy, Government Transformation Programme (GTP), ETP, New Economic Model (NEM), the 10th Malaysia Plan and Budget 2011: and through LEGO colour (intrinsic factors) at organization and individual level , a comprehensively designed route map to lift the status and higher quality of life throughout Malaysia can be realized without at the same time setting aside the role of green awareness in the country development agenda.

Intrinsically, there are still tonnes of work to be done and to attune people's behavior toward greenality. It is imperative that project managers need to think green throughout their project life cycle with this LEGO concept in view and make impeccable decisions that take into account the impact of it on the environment. All the parties including government, real estate company, construction developers, construction contractors, entrepreneurs, as well as the specific individual organisation must work together to uphold government's initiatives and sustainability by applying the elements of technology advancement in each of their green building projects. The synergy between the external and internal attributes will influence the environmental sustainability even globally.

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