

Fundamental
strategies towards
sustainable
construction
construction essay



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Abstract- Since the construction industry has great impact on the environment, the consideration of sustainable development through sustainable construction is needed. Sustainable construction is a way for the building industry to move towards achieving sustainable development, taking into account the environmental, socio-economic and cultural issues. Specifically, it involves issues such as design and management of buildings, materials and building performance, energy and resource consumption. Therefore, sustainable construction provides solutions that require optimization all sort of environmental impacts since global warming is no longer a remote concept but a real threat to the future of mankind. This paper is review of sustainable practice in construction industry. Mixed methods of quantitative research by way of questionnaire survey and qualitative research using semi structured interview will be applied. For the first stage of data collection, the quantitative method will be applied to identify the barriers in implementing the sustainable construction. On the other hand, qualitative method will be used to produce strategies for the Malaysian construction participants to implement the sustainable construction. Interview session will be conducted among experienced professionals in construction industry in order to generate their opinion towards the implementation of sustainable construction in Malaysian construction industry. At the end of the research, discussion and recommendation will be covered, summarising the research content. This research is attempted to develop a framework policy of sustainable construction in Malaysia. A new strategies and guidelines seem to be part of the framework design. The framework derived from this research will be used as the criteria to benchmark the gaps in process and strategy for <https://assignbuster.com/fundamental-strategies-towards-sustainable-construction-construction-essay/>

sustainable construction industry in order to capture good practices in terms of minimising environmental impacts and improve Malaysian readiness towards the sustainable issues.

Keywords- Global warming, sustainable development, sustainable construction, environmental impact, policies

Introduction

The newly launched National Green Technology Policy in 2009 reflects Malaysian Government's seriousness in driving the message that 'clean and green' is the way forward towards sustainable construction which will benefit current and future issues related to economic, social and environment and also quality of life. Such policy showed that government were seriously encouraged the efforts in tackling all related green issues in the country that complement the global vision on sustainable development.

This research will be looking into the sustainable practices in Malaysian construction industry and will be focusing on the sustainable policy in other Asian countries such as Singapore, Thailand, Indonesia and Japan which very much active in Green Technology and sustainable projects. The reason for this is to show the 'gaps' that should be filled in by the policy makers in order to catch up with the current developments that have been happening in other countries.

The purpose of this paper is to disclose the overall structure of the research that is currently being undertaking by the researcher. Therefore, it is beyond the scope of this paper to discuss any findings from any of the research methodology adapted to date.

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PROBLEM STATEMENT

Nowadays, one of the most pressing concerns for this industry is global warming which is an increase in the average temperature of the Earth's atmosphere and oceans as a result of the buildup of greenhouse gases in the atmosphere [1]. Global warming, sometimes called climate change, is causing an increase in the earth's near-surface temperature due to changes in the atmospheric composition. Many scientists believe recently observed global warming is partially caused by greenhouse gas emissions from energy production, transportation, industry and agriculture [2] (Oh and Chua, 2010; Radhi, 2009). In Malaysia, the major contributor of the greenhouse gas is carbon dioxide emissions and the trend has been increasing every year since 1982. The global carbon dioxide emission has risen significantly from 19, 380 million tons in 1980 to 31, 577 million tons in 2008. It is predicted that carbon dioxide emission will increase to 40 billion tons in year 2030 if no tremendous effort are thrown in to mitigate it [3-4]. In addition, according to Dato' Sri Peter Chin Fah Kui Minister Of Energy, Green Technology And Water in his speech in the ASEAN Affairs and the Malaysia-Europe Forum, greenhouse gas emissions in Malaysia has increased substantially by 13% and 32% per GDP and per capita respectively between 1994 and 2000. Malaysian total greenhouse gas emissions increased by 55% in 2000 when compared with the 1994 levels. Furthermore, he stated that Malaysia's emission of CO₂ per capita which is about 7. 1 tonne per capita was higher than the average for Asia Pacific of 2. 6 tonne per capita based on the National Communications Report. Since global warming has emerged as the most serious environmental issues of our time and since sustainability becoming an important issue of economics and political debates worldwide <https://assignbuster.com/fundamental-strategies-towards-sustainable-construction-construction-essay/>

therefore, it is vital important for Malaysian construction industry to further implement the sustainable construction which eliminates the negative impact on the construction industry.

At present, Malaysia is a population with about 27.73 million covering area of 329,750 km² based on the latest census in 2008 and the GDP grew at an average rate over 5.7% during the last 6 years [5]. As such, being a fast industrializing country, it is expected that an increased need for more houses, buildings and public infrastructure. Due to that matter, the government introduces the “Sustainable Concept” that can be applied to the construction industry to maintain the ecosystem and built environment as well. While standard building practices are guided by short term economic considerations, sustainable construction is based on best practices which emphasize long term affordability, quality and efficiency (Isover, 2009). Sustainable construction, which has inevitably been dubbed ‘green construction’, describes the responsibility of the construction industry in attaining sustainability (Nazirah, 2009). Besides that, sustainable construction aims at reducing the environmental impact of a building over its entire lifetime, while optimizing its economic viability and the comfort and safety of its occupants (Aguilar, 2008; Isover, 2009; PediaPress, 2009). Furthermore, sustainable construction is all about maintaining a balance between the human need for buildings for shelter and business operations and infrastructure for higher quality of well-being at one hand, and preserving natural resources and ecosystems, on which we and future generation depend at the other hand (Singh, 2007; Nazirah and Aini, 2010). As mentioned previously, sustainable construction is seen as a way for the

construction industry to contribute to the effort to achieve sustainable development. However, in Malaysia, the green movement is still at low level where sustainable projects in Malaysia are mostly at the pioneer stage [6]. She pointed out that the modest number of sustainable projects being built in Malaysia is a sign of the slow intake of the sustainability concept among construction practitioner. Thus, this indicates that the concerted efforts by the government, non-governmental and education institutions have not fully penetrated into construction activities. Looking the above statement, it can be conclude that there is still lack of effort in the application of the sustainable concept among construction practitioner and this scenario shown that it seems difficult for the Malaysian construction industry to further implement the sustainable construction. Thus, more efforts are needed and should be directed towards realising the green agenda of the industry to enhance the level of environmental awareness and civic consciousness among the people to build sustainably in the future. Therefore, this research will identify the barriers in implementing the sustainable construction in Malaysian Construction Industry.

Government policies have been recognised as important instruments in driving the market for sustainable buildings [7]. At recent, the green technology promotion was further emphasized in the 9th Malaysia Plan (2006-2010). This indicate that government were seriously encouraged the efforts in tackling all related green issues in the country that complement the global vision on sustainable development. The establishment of the Ministry of Energy, Green Technology and Water to replace the Ministry of Energy, Communications and Multimedia in early 2009 reflects Malaysia's

seriousness in driving the message that ‘ clean and green’ is the way forward towards creating an economy that is based on sustainable solutions. The launch of the new National Green Technology Policy in April 2009 by the current Prime Minister, Datuk Seri Najib Tun Razak, shall provide guidance and create new opportunities for businesses and industries to impact on the economic growth positively. The National Green Technology Policy is built on four pillars which are seek to attain energy independence and promote efficient utilization, conserve and minimize the impact on the environment, enhance the national economic development through the use of technology and improve the quality of life for all [8]. The National Policy on Environment seeks to integrate environment considerations into development activities to foster long-term economic growth and human development and to protect as well as enhancing the quality of environment. Thus, the National policy is seen as a major catalyst of the government’s strategies in order to promote sustainable construction since sustainable construction is a way for the building industry to move towards achieving sustainable development. More strategies and actions should be pursued actively to speed up the process in creating sustainable oriented construction industry which is paramount towards building a sustainable future. Therefore, this research is an attempt to address the issues of sustainable construction and what approaches needs to be implemented for sustainable construction in Malaysia.

THE EMERGENCE OF SUSTAINABLE DEVELOPMENT

Sustainability has become an important issue worldwide. There is a growing concern for sustainability due to severe negative impacts of human development activities in the earth. The term “ sustainable development” is

basically emerged from The World Commission on Environment and Development established by the United Nations in 1983 and now known as the Brundtland Commission. The report, Our Common Future in the publication of “ Brundland Report” provided the most simple and widely used definition for sustainable development as development to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs [9]. The concept was given currency at the United Nations Conference on Environment and Development (UNCED) in 1992, and reinforced at the World Summit on Sustainable Development (WSSD) in 2002. UNCED saw the first global agreement on programmes for action in all areas relating to sustainable development, as documented in Agenda 21 [10]. During the United Nations Earth Summit held by the United Nations Environment Programme (UNEP) in Rio de Janeiro (1992), a sustainable development was defined as improving the quality of human life while living within the carrying capacity of supporting eco systems. This definition has an impact on the economic, social and environmental development and was later formally adopted worldwide [11]. This has lead to a growing concern around the world to improve the way of our development into a more responsible way without destroying the world we lived in.

SUSTAINABILITY IN CONSTRUCTION

Buildings, infrastructure and the environment are part of our living environment thus affecting our living conditions, social well-being and health. Hence, it is important to explore environmentally and economically sound design and development techniques for buildings and infrastructure for them to be sustainable, healthy and affordable, and also which

encourage innovation in construction [11]. Previously, the concern on environment is relatively a small part of most of construction development. However, with the growing awareness on environmental protection due to the depletion of non-renewable resources, global warming and extremity of destruction to ecology and biodiversity impact, this issue have gain wider attention by the construction practitioners worldwide. Many efforts are being directed to build sustainable in construction world. The direction of the industry is now shifting from developing with environmental concern as a small part of the process into having the development process being integrated within the wider context of environmental agenda [12]. With the implementation of sustainable construction, the construction industry is bound to bring about positive and proactive changes such as less pollution, waste and even constitutes to the well being of future generations. Therefore, the construction activities must work and comply with the need to protect and sustain the environment. As a consequence, achieving sustainability means achieving quality of life.

Existing research shows that construction activities are a major contributor to environmental pollution [13]. Hence, sustainable development is an answer to reduce the major impact on the environment. Sustainable development requires the construction industry itself to be sustainable first. There are three elements that are related to sustainable development, which are economic, social and environment element [14]. Sustainable in economic includes increase profitability and competitiveness. Sustainable in social elements covers aspects of the delivery of buildings and infrastructures that meets the satisfactorily meets the requirement of the users and

stakeholders. While sustainable in environment would consider the concerns on the conservation of natural ecosystems and minimization of environmental impacts and the consumption of energy and natural resources [10, 14]. Apart from that, sustainable construction is seen as a way for the construction industry to contribute to the effort to achieve sustainable development [6]. In brief, sustainable construction is the construction that contributes to the sustainable development. Abidin [15] suggested that the approach of sustainable construction will enable the construction practitioners to be more responsible to the environmental protection needs without neglecting the social and economic needs in striving for better living. Therefore, the challenge of the construction industry is to find the balance between three main pillars; environmental, economic and social in order for the construction industry to move towards sustainability.

Since the construction industry has a great significant impact on the environment, the implementation of sustainable construction is a must. According to Tan, Shen and Yao [13] sustainable construction refers to the integration of environmental, social and economic considerations into construction business strategies and practices. It is the application of the principles of sustainable development to the comprehensive construction cycle from the extraction of raw materials, through the planning, design and construction of buildings and infrastructure, until their final deconstruction and management of the resultant waste. However Hamid, Noor, Kamar, Ghani, Zain, and Rahim [16] further explained that sustainable construction is the creation and responsible maintenance of a health built environment, based on ecological principles and by means of an efficient use of resources.

In addition, sustainable construction is a way for the building industry to move towards achieving sustainable development, taking into account the environmental, socio-economic and cultural issues [11, 17]. Aguilar [18] pointed out that the adoption of sustainable construction practices also offers environmental protections as well economic advantages for consumers and communities offering substantial savings in the buildings life-cycle operating costs. Singh [19] further added that sustainability in construction is all about following suitable practices in terms of choice of materials, their sources, construction methodologies as well as design philosophy so as to be able to improve performance, decrease the environmental burden of the project, minimize waste and be ecologically friendlier. Consequently, sustainable construction deals with limited resources especially energy and how to reduce the impacts on the natural environment.

Previous studies related to the research

There were various research has been conducted in the area of sustainable construction and the quantity seems to increase over the years since environmental issues become more concerning worldwide. The research that has been done in the area of sustainable construction can be grouped into four which are research on sustainable practices, research on opportunities and awareness, research on materials and research on policy. The research that has been done in sustainable practices for instance is by Tan, Shen and Yao [13] which conducted a research on sustainable construction practice and contractors' competitiveness which focuses on the relationship between sustainability performance and business competitiveness. The findings

showed that there is no unique relationship between the two variables. But using a long-term view, sustainability performance will have greater contribution to business competitiveness in the future. Whereas Chen, Okudan, and Riley [20] conducted a research on sustainable performance criteria for construction method selection in concrete buildings. The study was based on a qualitative research approach. In her study, she has identified a list of possible opportunities and strategic directions for government and industry stakeholders' consideration in view of the future development. While Shen, Tam, Leona and Ji [21] discussed major challenges of conducting project feasibility study to the sustainable construction practices with reference to Mainland China construction industry. The study demonstrated that there is a need for shifting the traditional approach of project feasibility study to a new approach for embracing the principles of sustainable development. Besides, Shafii [11] has done a research on sustainable Construction in the developing countries of Southeast Asia and found that the status of sustainable construction in Southeast Asia is still in its infancy. Reffat [22] in his research addressed the essential requirements for developing sustainable construction in developing countries including considering sustainability as a necessity, efficient management of resources, shared responsibility, quality improvement of construction processes and products, improving the capacity of construction sector, and the need for integrated research. The innovation of building materials and technologies as an opportunity of sustainable construction in developing countries is introduced. A tool for sustainable building is also presented. Mohamad [23] conducted a research on Principles of Sustainable Development in Ibn Khaldun's Economic Thought which focused on the nature of pursuable <https://assignbuster.com/fundamental-strategies-towards-sustainable-construction-construction-essay/>

development in the economic model of Ibn Khaldun. The researcher cursorily examines Ibn Khaldun famous work al-Muqadimmah, as well as the interpretations of his work offered by contemporary scholars. This research reinterprets those views and concludes that the economic growth theory of Ibn Khaldun suggests sustainable development if one opts for a moderate rate of integrated development. Ibn Khaldun's theory of development runs towards the same direction as that of Basic Needs, Dematerialisation, and de-growth in our time. Overconsumption, corruption of morality, and the greed for luxury are recognised the indicators of fall of civilisations which are taken here to be the indicators of unsustainable development. His views can guide Muslim countries in drafting development policy and also can be used by educators for promoting sustainable development in Muslim Countries. A research done by Destatte [24] discussed that foresight could be a major tool in tackling sustainability as well as one of the best methods of preparing sustainable strategies and policies since the efforts made to construct specific methods dedicated to building sustainable strategies seem rather weak. Futurists themselves underestimate the relationship between sustainable development and foresight, even if they are talking about sustainable planning.

Research on opportunities and awareness for instance has been done by [6, 15] on awareness and application of sustainable construction concept by Malaysian developers. This study has been conducted to investigate the level of awareness, knowledge and implementation of sustainable practices based on the perceptions of the project developers in Malaysia. The findings was only large developers are beginning to take heed towards sustainable

implementation in their projects. Due to limited understanding and the concern about cost, many developers are still reluctant and uncertain concerning pursuit of sustainability in their projects. Whereas in the research, *The Way Forward of Sustainable Construction and Green Technology In Malaysia* conducted by Hamid, Noor, Kamar, Ghani, Zain, and Rahim [10] investigated the challenges facing by the industry in developing sustainable agenda and discusses Construction Industry Development Board (CIDB)'s initiatives in implementing sustainable agenda. Furthermore, he highlighted current research on sustainable construction and green technology and provides strategic recommendations as the way forward. While Shafii, Ali, and Othman [11] in their study focused on the public & private initiatives, partnerships and international co-operations to support sustainable building development in Malaysia. The finding was 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. Despite these responses and demand, the development in sustainable building is relatively slow; this in part, might be due to the lack of incentives and regulatory procedures to guide sustainable building construction. The Green Building Mission launched recently by the Malaysian Government is an indication of a promising effort to ensure sustainable production and delivery of the construction industry products to fulfill these demands. The paper also discussed on the trends, challenges and barriers for implementations of

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sustainable building with recommendations for establishing clear policy targets.

Research that has been conducted on materials basically focused on the sustainable material in construction industry and based on laboratory oriented. For instance research conducted by Voo [25] presents an overview of the material characteristics of a Malaysia blend of ultra-high performance ‘ductile’ concrete (UHPdC) known as DURA. The comparison studies show that many structures constructed from UHPdC are generally more environmentally sustainable than built of the conventional reinforced concrete with respect to the reduction of CO₂ emissions and embodied energy.

However, in this paper, the researcher intends to focus on sustainable policy. Generally, there is no similar thorough research which has been done by any other researcher in the Malaysian construction industry regarding on policy since Malaysia still do not have policy on the sustainable construction based on the preliminary interview that has been done with Encik Ishamuddin bin Mazlan from the Ministry of Energy, Green Technology and Water (KeTTHA). If any, it merely focuses on the Environmental policy for instance a research conducted by Ambali [26] on Malaysian Experience in Policy of Sustainable Environment. The findings of the paper have shown an empirical relationship between environmental degradations and indicators of human development activities in Malaysia and elsewhere in the world. However, the paper reflects some fundamental issues that need to be addressed by the government for future direction of its policy efforts towards protection of natural resources and the environment at large. Whereas Zhang and Wen [27] in her research, <https://assignbuster.com/fundamental-strategies-towards-sustainable-construction-construction-essay/>

review and challenges of policies of environmental protection and sustainable development in China determine how best to coordinate the relationship between the environment and the economy by taking a look at the development of Chinese environmental policy in order to improve quality of life and the sustainability of China's resources and environment. Examples of important measures include the adjustment of economic structure, reform of energy policy, development of environmental industry, pollution prevention and ecological conservation, capacity building, and international cooperation and public participation. While a research conducted by Hezri and Hasan [28] views the recent history of Malaysia's evolving policy response to development needs and environmental change as consisting of four distinct stages. Despite an impressive array of policy statements and strategies to implement sustainable development, many challenges remain today. A clear articulation of normative principles of sustainable development is of paramount importance, as is the monumental task of policy implementation. The article argues that the trajectory of Malaysia's policy on natural resources and environmental issues bears the characteristics of path dependent evolution. At PhD level, Kumorotomo [29] discussed the process of decision-making on Indonesian fiscal decentralisation policy in order to explain policy changes and continuities. It focuses on developments from 1974 to 2004. Based on the review of the previous studies related to the research that have been discussed above there seems no study that has been done (yet) in the area of sustainable construction policy and this will be discussed by the researcher in this Master research. Therefore, the gap has been identified and in order to contribute to the existing body of knowledge.

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RESEARCH AIM AND OBJECTIVES

The aim of this research is to develop framework policy for the Malaysian Construction participants to move towards sustainable construction. In order to achieve this aim the following objectives were identified:

Objective 1: To determined the importance of implementing the sustainable construction in Malaysian Construction Industry.

Objective 2: To identified the barriers in order to implement sustainable construction in Malaysian Construction Industry.

Objective 3: To develop fundamental strategies in promoting the sustainable construction in Malaysian construction industry.

RESEARCH QUESTIONS

Research questions serves as a guide in fulfill the aim and objectives of the research. In order to resolve the research problem, the following research questions were applied:

Research question for objective 1

What and why sustainable construction is important in the Malaysian construction industry?

How important of implementation of sustainable construction in Malaysian?

How sustainable construction can reduce the global warming or climate change in Malaysia?

Research question for objective 2

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What are the barriers in implementing the sustainable construction in Malaysian Construction Industry?

How to minimise the barriers?

Research question for objective 3

What are the strategies in promoting the sustainable construction in Malaysian construction industry?

What are the roles of various sectors in promoting the sustainable construction in Malaysian Construction Industry?

2. 1 What are the roles of the government agencies?

2. 2 Private sector? Developers? Contractors?

RESEARCH METHODOLOGY

The research methodology serves as a guide in achieving the aim and objectives of the study. This section would focus on the method of study to be carried out in order to achieve the objective of this research. In this research, mix method of questionnaire survey and case study will be applied.

Quantitative Approach

For the first stage of data collection, the quantitative method will be applied in order to identify the barriers in implementing sustainable construction in Malaysian construction industry.

Qualitative Approach

On the other hand, qualitative method will be used in order to produce strategies to further implement the sustainable construction. Interview session will be conducted among experienced professionals who involved directly in construction industry. The aim is to generate their opinion towards the implementation of sustainable construction in Malaysian construction industry.

SIGNIFICANT OF THE RESEARCH

This research will add to the body of knowledge that with the implementation of sustainable construction the construction industry is bound to bring about positive changes for instance less pollution, waste and even constitutes of well being future generations. This research is expected to develop a framework policy of sustainable construction in Malaysia. A new strategies and guidelines seem to be part of the framework design. This research will emphasize the importance of implementation of sustainable construction in Malaysian construction industry in order to sustain ecological system and enhance the social well being of all Malaysian citizens. Besides that, this research will identify the barriers in implementing the sustainable construction so that methods can be taken in order to minimise those barriers and finally come out with the strategies so that Malaysian participants can further implement the sustainable construction. Apart from that, the findings that meet the objectives of this research will open new fields for future researchers and academicians to carry out extensive researches on the topics concerned. In addition, data and output analyzed from the findings can be further referred or elaborated in any educational deliverance or scholarly materials. Therefore it is anticipated that this

research will generate interests from the public, academicians and also practitioners. In short, the outcome of this research will affect various parties involved in construction industry including government and private agencies, construction suppliers and finally end users. Therefore, this research will certainly be beneficial to all parties.

EXPECTED FINDINGS

This research is attempted to develop a framework policy of sustainable construction in Malaysia since there is no specific policy on sustainable construction. Compared to other developed countries such as UK, Sweden and even our neighborhood countries like Singapore and Thailand have their own policies on Sustainable construction. Therefore, a new strategies and guidelines seem to be part of the framework design. At the end of the research it targets to improve the practice of sustainable policy in Malaysian construction industry and indirectly assists the developers, architects and contractors in improving the performance of our industry towards sustainable issues.