

AN EXPLORATORY STUDY OF READINESS ON IMPLEMENTING SUSTAINABLE CONSTRUCTION IN SIBU SARAWAK, MALAYSIA

Nadzirah Zainordin¹

¹School of Built Environment, University College of Technology Sarawak, Sibu Sarawak, Malaysia.

*For correspondence; Tel. + (60) 84367300, E-mail: nadzirah@ucts.edu.my

ABSTRACT: *The objective of this research is to explore the level of readiness among construction practitioners in Sarawak in implementing and adapting sustainable construction in their practice. The respondent's has been limited to the stakeholders and contractor only. Sample of respondents set by 100 respondents, which the location of the Sarawak itself limited to Sibu district only. Qualitative and quantitative methodology has been chosen to gather the best possible data to identify the objective set for this research. . Working with both methods provides the researcher with a powerful tool; answers are likely to be precise, measurable and easy to understand. The outcomes from this research study it's to put the result of this research for the service of this sector to increase the awareness of the importance of this study and to work together with Sarawak's relevant bodies on implementing this concept among construction's practitioner's to eliminate these barriers in order to move forward to achieving and to implementing sustainable construction among Sarawak's construction practitioners and also to emphasize on the importance of implementing sustainability.*

Keywords: sustainable construction, key barriers, practitioners

1. INTRODUCTION

The development and construction activities may contribute a higher impact towards the expanding of the economic side in any country. This adverse impact, especially towards environment may lead people realise that certain approach and implementation certain ideas are needed to solve this issue. Delivering sustainable development in one country by applying the conceptual framework as not as simple like that. The adoption of sustainable construction requires action from all engaged in constructing and maintaining the structure or building, including those providing design, consulting and construction services [3]. To increase the consideration to sustainability, the construction practitioners must be willing to change their behaviour in exploring new territory and willing to adopt new products, ideas and practices [16].

In [8], the author mentioned that sustainable development is important for management and protection of the environment. The issues of sustainable development deals with a wide range of factors within the local and global level, making sustainable development a common issue for different business sector [3], which in turn poses differences in practices of work often seen in many cases [9]. All the construction practitioners have to face so called as long-term challenge of implementing the sustainable development concept in their practicing [4].

Furthermore, sustainable development can also be blended with sustainable construction as well. According to [10], the proposal of sustainable construction concept, it's to justify the responsibility by adoption of this concept to construction sector. Sustainable construction has special aiming of sustainable development which targeting to the specific group of construction industry who participating in certain activities such as develop, plan, design, construct, operate and maintaining the built environment [1].

Due to the increase in environmental complexities, it is becoming increasingly difficult to ignore the concept of sustainable development [11]. Scholars claim that there is no common understanding of the definition of sustainable development [14]. This concept has been publicized all over

the world as an effort to achieve a more unbiased approach to industrial development.

According to [15], sustainable projects in Malaysia are mostly at the pioneer stage, indicating that the industry is still at its infancy in this field. The modest number of sustainable development project being built in Malaysia is assigning of the slow intake of the sustainability concept among construction practitioner. Apart from that, the sustainability tagline mainly about dissatisfaction with the outcome of construction and the irresponsible actions by all level of construction practitioners in Malaysian construction industry and to be exact in Sibu district which is in Sarawak state. Thus, more efforts need to take into consideration in order to buzz-up the level of environmental awareness and civic consciousness among the people to build sustainably in the future.

2. BACKGROUND OF THE RESEARCH

Sustainable construction is a crosscutting issue and means different things to different persons [2,16]. The review of related works shows multiple definitions exist and there is discrepancy in terms of scope and context [6,16]. For straightforwardness, sustainable construction is best described as the subdivision of sustainable development and its application to the construction industry. The term sustainability is commonly defined as utilizing resources to meet the needs is the present without compromising the future generation's ability to meet their own needs [18].

The construction industry involves all who plan, develop, produce, design, modify or maintain the built environment and includes manufacturers and suppliers of construction materials, clients, contractors, consultants and end users of facilities [2,7]. Therefore, sustainable construction could be best described as a subset of sustainable development, which encloses matters such as tendering, site planning and organization, material selection, recycling, and waste minimization [5]. Sustainable construction is defined by some researchers as a construction process which integrates the fundamental themes of sustainable development [2,13,17]. Such construction processes

would hence bring benefits such as environmental responsibility, social awareness, and economic profitability to society at large [5].

On the contrary, prospective clients are more often than not not aware of these savings. However, if life-cycle cost philosophy is seriously put into practice, developers and clients will realize and appreciate the benefits. Sustainability will not only reduce life-cycle cost, but also increase productivity of employees using the building [3]. Lack of professional knowledge has also been recognized as a grave challenge in Sustainable Construction implementation. [19] claim that while designers display confidence in their ability to access and utilize knowledge in all-purpose, this confidence falls when sustainable construction issues are addressed. This presumes that professionals within the built environment need to be copiously familiar with sustainable construction principles in order to effectively implement its practice [2]. Apart from that they also need to form an integrated professional team right from conception to the closure stages of construction projects. This team needs to have the best available information on products and tools to achieve sustainable construction. However, Williams and [12] identified that that was not the case at present.

Author [20] in her writing, the sustainable development can offer some benefits such as improving occupant health, comfort, and productivity, reducing pollutant and landfill waste. The sustainable building approaches applies a project life cycle cost analysis for determining the appropriate up front expenditure, this analytical method calculates cost over the useful life of the asset [20].

Reported by World News (Aug 15, 2010), Malaysia is ranked as 37th in the world on Newsweek magazine's "The World's Best Countries" list, which ranks top globe nations by economy, politics, education, health and quality of life. In Newsweek's first-ever Best Countries special issue, they set out to answer a question that is at once simple and incredibly complex - if you were born today, which country would provide you the very best opportunity to live a healthy, safe, reasonably prosperous, and upwardly mobile life?

By referring to [13] in her perspective, by applying sustainable development, there are many benefits and advantages can be achieved, it include the environmental, economics, socials, health and community. According to [13], there is only one disadvantage in applying sustainable development or sustainable construction. The building created following sustainable construction principles typically have a higher initial cost than ordinary building. But, not every project manages to get their overall net increased cost in a short period. To covers these problems, life analysis cost should be conducted to account for reduction of operating cost and increase the productivity [20]. Sustainability in construction inevitably change over the year. The method of operating its in regards for environmental impact to a new mode that makes environmental concerns a centrepiece of its effort [1]. But then, over a year, the concern on environmental aspect relatively decreases and become a small part of construction development. However, this issue may overcome with the involvement and awareness among the entire construction practitioner's regarding this issue.

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 [1]. Thus, the activity involve in construction must be reflect to with the needs of environmental sustainability. Sustainable construction it's a process whereby the sustainability has been achieved [1]. The concept of sustainability must be applied into construction industry to influence the manner in which a project shall be conducted to strike a balance between conserving the environment and maintaining prosperity in development [16]. Attaining sustainability does not mean the eradication of adverse impact, which is an impossible vision at present, but rather than the reduction of it to a certain reasonable level [16]. In response to the urgent need for knowing the reasons behind the fluctuation and the severe decline in construction contribution in the economic, social and environment and the importance of this sector in achieving sustainable growth in the country to be exact in Sibu district in Sarawak. Here emerges the need to clarify and prioritize these concept to be implementing sustainability in their construction's field. Thus, leading to the importance of this research and the main question: Are they ready to implementing sustainable construction in Sarawak?

Considering the vastness of this subject; the researcher decided to highlight into two big scopes, the first one it's to test the respondents understanding in sustainability concept among contractors in Sibu, Sarawak. Another scope it's to test the level of awareness of respondents towards sustainability implementation in construction industry's filed in Sibu. These two scopes to measure the readiness of construction's practitioner in Sibu to implementing the concept of sustainable construction in this district.

3. RESULTS AND DISCUSSION

The descriptive analytical methodology and field of study has been used in this research. The descriptive methodology was the main used methodology in this study, to describe the main features of collective data in quantitative terms, the researcher was interested to gather the largest possible data; by covering the largest possible percentage of the chosen sample; and the descriptive analytical methodology was the best possible method. Working with quantitative methods provides the researcher with a powerful tool; answers are likely to be precise, measurable and easy to understand. However, this research has been conducted to 100 numbers of respondents and it's also limited to the contractors froG7, G6, G5 and G4 levels only in Sarawak particularly in the coverage of district, which is Sibu.

Figure 1 shows the respondent insight in general towards sustainability concept among contractor. There have nine areas to of description to be tested to the respondents. Most of respondents which are contractors they are agree with 65% of them saying that stakeholders lacked information, unaware or inexpert to achieve sustainable concept. Most of them said that they are no idea for almost 35% - stakeholders were not included in the development process to implement sustainability measures. For an unsustainable measure was allowed by the regulator or statutory undertaker- 80% neutral to response on that statement. It shows that they are actually

do not really have an idea or do not have knowledge in that statement. 50% of them agree that a sustainable measure was not available. Thus, it's a clear indicator that they do not really have a framework or specific guideline on sustainability concept implementation. 42% agree that the sustainability measurement cost too much.

Furthermore, 60% no idea on the statement that one sustainability measures was forgone in order to achieve another. 40% agree that stakeholders had no power to enforce or require sustainable measures. They strongly agree with almost 70% sustainability measures was not required by client including purchasers and tenants. Last for this scope, 70% are agree that sustainability measure was not considered by stakeholders. Next, for the second scope it's to measures level of awareness and understanding of the sustainable construction implementation in Sibu district to which limited to the contractors only. For this scope there have 23 descriptions to be tested among respondents. The most focusing point to look into it's 94% saying that they are strongly agree with financial capability. There believe that by implementing this concept beyond the normal practices will cost a money. And the readiness to invest some amount of money for a new concept that they really do not have a knowledge its still questionable to their side. 50% of respondents strongly agree that the need of advancement of construction technology. New technology on building construction really need to be adopted from peninsular or other country so that they can be more ready to implement the sustainable construction in their project instead of stick with conventional or normal method that are normal for them to use in every project.

Same goes to excessive demand and variation during construction. 70% said that the economic need to be stable to cater with this concept and client as well need to give full support and involvement in order to implement this concept. 65% strongly agree that competitive procurement and tendering method. There are actually no specific procurement in sustainable construction. Furthermore, 65% saying the competitive procurement and tendering method. 70% of them saying strongly agree on selection of competent contractor to implementing this concept in their construction industry. Same goes percentage for effective communication among project team. The discussion can not be abroad due to the limitation of the knowledge towards this concept.

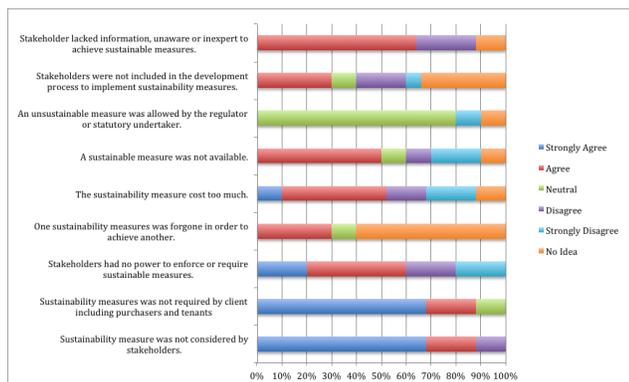


Figure1: General Insight of Sustainability Concept among Contractor

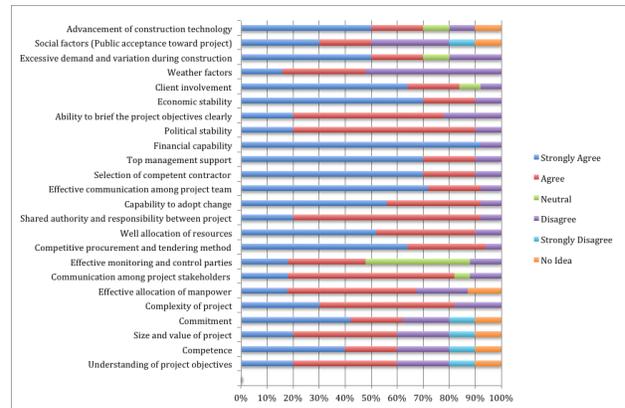


Figure 2: Level of Awareness and Understanding towards Sustainable Construction Building

4. CONCLUSIONS

The readiness it's count based on the initiatives and also the full support from the relevant bodies and organization to make this concept can be well-aware, understandable and fully implementing in their Sibu's construction field. The initiatives and support by federal government towards Sarawak state government for more practices on sustainable construction concept in their construction projects. Furthermore, the acceptance among construction practitioners very much needed especially contractor is still reserving themselves and still no movement to the next level which to implementing the said concept. This is because of they are not ready yet due to certain constraint that they have to face. State government must ensure that every project offer must sellable to various levels of income earners so that contractors and clients can get motivate from the demand. Implementation is believed to be low because of several factors such as lack of knowledge, poor enforcement of legislation, education and training provided and passive culture to upgrading and implementing new style or method of construction.

Several recommendations that can be speed up to overcome the barriers; providing knowledge and training like organizing seminar, talk or workshop and conferences to educating the contractor and stakeholders on the concept and the benefits can be generated from implementing sustainable construction in their project. Actions must be initiated to enable this concept to be applied efficiently in future construction projects. Provide as assistant to stakeholders, contractors and consultants in incorporating sustainable issues at the project conceptual stage and planning stage. The state government must ensure all the parties involves like stakeholders, consultant, contractor and the local authority as well must play their own role to ensure the succesful implementation of this concept. To encourage all parties to get involves, the state government can provide the standards or introduce the proper guidelines for sustainable construction or introduce new regulations to the Sarawak construction's industry.

Finally, stakeholders' actions are influenced by the market situation and demand from the buyer. To increase buyers demand for sustainable houses will push the housing developers and also contractors to improve the specification

of their houses which include certain sustainable elements to attract buyers. To conclude, more efforts are necessary to enhance the level of environmental awareness and civic consciousness among the Sarawak's people to build sustainably in the future. These are the point that should put into an account to make them ready to implementing this concept.

5. REFERENCE

- [1] Abidin, N. Z., Yusof, N., & Othman, A. a. E. (2013). Enablers and challenges of a sustainable housing industry in Malaysia. *Construction Innovation: Information, Process, Management*, 13(1), 10–25. <http://doi.org/10.1108/14714171311296039>
- [2] Ametepey, O., Aigbayboa, C., & Ansah, K. (2015). Barriers to Successful Implementation of Sustainable Construction in the Ghanaian Construction Industry. *Procedia Manufacturing*, 3(Ahfe), 1682–1689. <http://doi.org/10.1016/j.promfg.2015.07.988>
- [3] Azapagic, A. (2003). Systems Approach to Corporate Sustainability: A General Management Framework. *Process Safety and Environmental Protection*, 81(5), 303–316. <http://doi.org/http://dx.doi.org/10.1205/095758203770224342>
- [4] M. S. G Blair,., & Chisholm, C. U. (2006). The role of entrepreneurship in the personal and professional development of engineers and technologists for employability. 10th Baltic Region Seminar on Engineering Education, Seminar Proceedings, 79–82. Retrieved from <Go to ISI>://000243460200016
- [5] C.A. Langston, G.K.C. Ding, G.K.C. Sustainable practices in the built environment, 2nd Edn., Butterworth Heinemann, Oxford, 2001.
- [6] C.J. Kibert, J. Sendzimir, G.B. Guy. Defining an Ecology of Construction. *Construction Ecology: Nature as the Basis for Green Buildings*. New York: Spon Press, 7-28, 2000. [2]
- [7] CRISP. Construction for Sustainable Development – Research and Innovation Needs. Strategy Panel, London, 2000.
- [8] Ding, G. K. C. (2008). Sustainable construction-The role of environmental assessment tools. *Journal of Environmental Management*, 86(3), 451–464. <http://doi.org/10.1016/j.jenvman.2006.12.025>
- [9] Gloet, M. (2006). Knowledge management and the links to HRM: Developing leadership and management capabilities to support sustainability. *Management Research News*, 29(7), 402–413. <http://doi.org/10.1108/01409170610690862>
- [10] Forster, C. H. Q., & Tozzi, C. L. (2001). An architecture based on constraints for augmented shared workspaces. In *Brazilian Symposium of Computer Graphic and Image Processing* (Vol. 2001-January, pp. 328–335). <http://doi.org/10.1109/SIBGRAP.2001.963073>
- [11] Joseph, C. (2013). Understanding sustainable development concept in Malaysia. *Social Responsibility Journal*, 9(3), 441–453. <http://doi.org/10.1108/SRJ-03-2012-0024>
- [12] K. Williams,C. Dair. What is stopping sustainable building in England? Barriers experienced by stakeholders in delivering sustainable developments, *Sustainable development*, Volume. 15, no. 3, page. 135-147, 2007
- [13] K. Chaharbaghi, R. Willis. Study and practice of sustainable development, *Engineering Management Journal*, Vol. 9, No. 1, Feb. 1999, pp. 41 – 48, 1999
- [14] Laine, M. (2005). Meanings of the term “sustainable development” in Finnish corporate disclosures. *Accounting Forum*. <http://doi.org/10.1016/j.accfor.2005.04.001>
- [15] Idris, N. H., & Ismail, Z. (2011). Framework policy for sustainable construction in Malaysia. In *Business, Engineering and Industrial Applications (ISBEIA)*, 2011 IEEE Symposium on (pp. 441–446). <http://doi.org/10.1109/isbeia.2011.6088855>
- [16] Ofori, G. (2000). Greening the construction supply chain in Singapore. *European Journal of Purchasing & Supply Management*, 6(3-4), 195–206. [http://doi.org/10.1016/S0969-7012\(00\)00015-0](http://doi.org/10.1016/S0969-7012(00)00015-0)
- [17] S. Parking. Sustainable Development: the Concept and the Practical Challenge. *Proceedings of ICE, Civil Engineering* 138 November, Pages 3-8, 2000. [6] K. Chaharbaghi, R. Willis. Study and practice of sustainable development, *Engineering Management Journal*, Vol. 9, No. 1, Feb. 1999, pp. 41 – 48, 1999
- [18] WCED, *Our Common Future*, 1987, World Commission on Environment and Development: Oxford University Press. Oxford, UK.
- [19] Y. Rydin, U. Amjad, S. Moore, M. Nye, M. Withaker. *Sustainable Construction and Planning*. The Academic Report. Centre for Environmental Policy and Governance, The LSE SusCon Project, CEPG, London School of Economics, London, 2006.
- [20] Siti Hawa Adila (2005). *Application of Sustainable Construction Principles in Construction Industry*. Universiti Teknologi Malaysia.