

RECYCLING OF CONSTRUCTION WASTE: AWARENESS AND CONSTRAINTS AMONG CONTRACTORS IN SARAWAK

Nur Sharfina Muhammad Shukri¹, Nik Fatma Arisya Nik Yahya², Masidah Abdul Majid³

¹⁻³*INTI International University*

¹*c.nana525@ymail.com*

²*fatmaarisya.yahya@newinti.edu.my*

³*masidah.majid@newinti.edu.my*

ABSTRACT Construction debris such as woods, drywall, metals, cupboard, masonry and others (i.e. Portland cement concrete, asphalt concrete, asphalt, shingles, plastic, glass and soil) are the common waste material that results from the construction, renovation or demolition of structures such as bridges, roads and buildings. Due to vast quantity of construction wastewhenever there is a construction activity, there is a need to minimize the quantum in order to protect the environment. One of the methods is through recycle. Recycle has been part of the environmental considerations but has yet to be widely practice in the construction industry of Malaysia. Due to the urgency to minimize construction waste, there is a need to identify what are the constraints to implement recycling method. It is also important to first determine the level of awareness among the contractors in adopting the method. Questionnaire were distributed and collected from 36 respondents from contracting companies in Sarawak through online survey. Overall findings of the research shows that most of the respondents agree that it is important to implement recycle construction waste material as the method reduces the demand upon new resources as well as cutting down the cost and effort of transportation and production. However there are some barriers in implementing recycle method such as lack of appropriate recycling facilities centre, the quality of construction waste is not up to the standard to be recycledand the quantity of wastes are huge. Hence, immediate reaction needs to be planned by the government in close cooperation with the key players.

Keywords: Contractors, Building Materials, Environment, Construction.

1. INTRODUCTION

Most construction waste goes into landfills, increasing the burden on landfill loading and operation. In recent years, the construction industry has depleted the nationals' natural resources and this is naturally followed by environmental degradation. Without environmental awareness, contractors have caused irreversible damage to the environment by disposing off waste materials blatantly. Commonly the construction companies will only concentrate in gaining the profit and failed to manage the construction wastes properly. On the other hand, recycling seems to be profitable alternatives if it is well managed which will increase the lifetime of landfills, beside of reducing the exploration of natural resources. Hence, the construction companies and organization should be given guidance and being train to have a proper wastes management which include the implementation of recycling practices.

“Recycling is the reprocessing of a reclaimed material and converting it into a new material or use. Reuse and recycling opportunities for construction and demolition wastes depend on the markets for the individual materials comprising the wastes and the ability to process the commingled waste or separate the individual materials”[1].

“The benefits from waste recycling are not solely environmental, but economic and aesthetic as well. Recyclable materials have differing market values depending on the presence of local recycling facilities, reprocessing costs, and the availability of virgin materials on the market” [2].

Recycling saves precious finite resources, lessens the need for mining of virgin materials, which lowers the environmental impact for mining and processing, and reduces the amount of energy consumed. Moreover, recycling can help stretch landfill capacity. Recycling can also improve the efficiency and ash quality of incinerators and composting facilities by removing non-combustible materials, such as metals and glass [3].

The present research focused on identifying the needs and barriers in implementing recycling methods as part of construction waste management. It is the aim of the present research to investigate the level of awareness among the contractors in Sarawak on recycling construction waste. Sarawak is chosen to become the focal point due to various upcoming construction projects as suggested by the government under the 11th Malaysia Plan. Presently, “The 3R programme: reduce, recycle and reuse has been promoted by the Malaysian government, however, it is said to be still in an infant stage. Most of the construction practitioners have yet to implement the 3R concept into their construction sites or some of them are not even aware of its existence.” [4].

2. RESEARCH METHODOLOGY

The data were collected via online survey among contracting firms in Sarawak. Relatively, around 36 respondents have responded. The findings were reviewed and compiled using descriptive statistics methods. Data is presented in the form of tables, histograms, graphs and pie charts to get a clearer picture. The results of the analysis, processing and findings obtained in accordance with the objectives of the study, the facts obtained will be presented in order of priority.

3. FINDINGS AND DISCUSSION

Majority of the contractors were strongly agree that the recycle method should be implemented in construction waste. As shown in Figure 1, contractors need to implement the recycling method because it reduces the demand up on new resources, as the highest rank with the mean of (4.06). This followed by it cut down the cost and effort of transportation and production, as the second rank with the mean of (3.89) and at the third rank are the use of the wastes which would otherwise be lost to landfill sites, with the mean of (3.71).

Table 1. The Needs of Implementing the Recycle Method

Types of Need for Recycling Construction Waste	Mean	Rank
It reduces the demand up on new resources.	4.06	1
It cuts down the cost and effort of transportation and production.	3.89	2
Use of the waste which would otherwise be lost to landfill sites.	3.71	3

Figure 2 shows the barriers in implementing the recycle method according to the rank are the quality and quantity of construction wastes, with the mean of (4.47). The second rank in the barriers are lack of appropriate location for recycling facilities with the mean of (3.83), followed by poor sources separation practices at job sites with the mean of (3.69) and rank 4 is absence of appropriate information in recycling method for construction wastes with mean of (3.61).

Table 2. Barriers in implementing the Recycle method

Barriers in implementing the recycle method in construction wastes	Mean	Rank
The quality and quantity of construction waste	4.47	1
Lack of appropriately located recycling facilities	3.83	2
Poor source separation practices at job sites	3.69	3
Absence of appropriate information	3.61	4

The second objectives are the barriers in implementing the recycle method in construction wastes, which the problems that contractors may encounter when implementing the methods. The quality and quantity of construction wastes is the main barriers which chosen by the respondents because recycling of construction waste materials do not give a commitment in the investment unless it is guaranteed to be supply in consistent quantity and quality of ingredients. Besides, lack of appropriately located recycling facilities, absence of appropriate information in terms of lacking in technical information for the recycling of construction materials and poor source separation practices at job sites. This possibly might be the reasons for why the contractors are not implementing the recycle methods, even though they are aware with the method and have the knowledge of the recycling.

The third objectives are to recommend some practical strategies to the industry especially to the contractors in order for an improvement in the future. Other than opinion given by the respondents, there are few recommendations which can be practice for improvement in the future such as doing the estimated cost of waste management which it has been established in recent research that it is of particular benefit to contractors when all cost components associated with waste production are identified and highlighted. The second recommendation will be audited the wastes which represents a systematic study of the waste management practices applied in the project. The third recommendation is to propose of new proper facilities in every Division in Sarawak in order to encourage the contractors to implement recycle method instead of dumping the wastes to landfill or illegal sites. In the future, the wastes which had been sent to the recycle centre can be re-new and use for future purpose.

4. CONCLUSION

In conclusion, the effort to recycle construction waste material has a long way to go in Sarawak. In general, the contractors from G5 to G7 are aware of the recycle practices which should be implemented on site but constrained due to some reasons and barriers. Among the reasons are lacking of recycling facilities in every district in Sarawak. For example, in Kuching there is only one facility which is managed by TRIENEKENS (Sarawak SdnBhd) located at 'Kuching Integrated Waste Management Park'. However, construction activities are not only confine to Kuching and therefore the contractors in other districts will have limitation to recycle construction wastes. Therefore, the authorities shall look into this matter and provides a recycling centre at every district specifically to handle the construction wastes.

REFERENCES

1. Kreith, F. and Tchobanoglous, G. (2002). Handbook of solid waste management, New York: McGraw-Hill Professional.
2. Matthew, J. F. (2009). A System Approach Solid Waste Analysis and Minimization, New York: McGraw-Hill Companies, Inc.
3. Tchobanoglous, G. (2003). "Solid Waste Management". University California Davis.
4. L.A. Manaf, Waste Management. 2009. Vol. 29.