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## Environmental Problems in Malaysia: A View of Contractors' Perception

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**Abstract:** The aim of this study is to highlight contractors' perception on various environmental problems and examine relative importance of each environmental problem as part of an overall construction waste management and environmental strategy for developing appropriate policies in Malaysia. The data in this study is based on contractors registered with construction industry development board (CIDB) of Malaysia and analysed by using mean score model. The findings revealed that contractors are concerned about all components of the environment and perceived the most important environmental problems which are deforestation, water pollution, air pollution and ground water contamination as well as soil erosion. In response to these problems, government and other stakeholders should implement various actions and measures to alleviate environmental problems. In addition, contractors and developers also need to be included environmental protection measures in their construction projects.

**Key words:** Contractors' perception, environmental problems, waste management, mean score model, Malaysia

### INTRODUCTION

In Malaysia since last two decades, the extensive building and infrastructure development projects have led to an increase in construction waste material generation (Begum *et al.*, 2007a). However, construction wastes which represent a greater proportion of total solid waste generation in the country (Begum *et al.*, 2006) and create greater problems such as illegal dumping should receive greater attention. A number of environmental effects is potentially caused by waste management (Tam and Tam, 2006; Barnard and Olivetti, 1990; Begum *et al.*, 2007b) and all of them should be properly controlled. Waste management affects environment through land use and pollution with hazardous substances that escape into air, water and soils. In recent years, waste reuse and recycle have been promoted in order to reduce wastes and protect environment (Caplan *et al.*, 2002; Shen and Tam, 2002; Faniran and Caban, 1998; Petts, 1995), but the effectiveness of their application has been suggested of limitation largely because the conditions for applying these approaches were not provided (Chun *et al.*, 1997). These conditions include proper site location and equipment for waste sorting out, good experience in waste recycling operations, trained supervisors and employees, knowledge of secondary materials markets and knowledge of environmental and safety regulations. However, very few contractors have spent efforts in considering the

environment and developing the concept of recycling building materials (Kartam *et al.*, 2004). Because contractors rank timing as their top priority, their effort is always focused on completing the project in the shortest time, rather than the environment (Poon *et al.*, 2001). Thus, the present study highlighted contractors' perception on the various environmental problems and examines the relative importance of each environmental problem as part of an overall construction waste management and environmental strategy for developing appropriate policies in Malaysia.

### MATERIALS AND METHODS

**Survey design and sampling method:** The data in this study is based on contractors registered with construction industry development board (CIDB) of Malaysia. Purposive random sampling method was used focusing on the contractors who were involved in general building and construction activities. Data was collected through interviews between October, 2003 to March, 2004 from contractors in the Klang Valley, specifically in Kajang, Petaling Jaya, Subang Jaya and Seri Kembangan. The final survey was based on 130 samples of contractors that represent 2% of the total registered contractors in Selangor. Interviews were based on a set of questionnaires that was pre-tested and modified before being used in the survey.

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**Analytical model:** The study employed mean score model to examine the relative importance of contractors' perception among various environmental problems in Malaysia. The data also analysed by using simple descriptive statistics such as sums, averages and percentages as well as t-test. The mean score model is as:

$$Ms_i = \sum_{j=0}^4 X_j N_{ij} / N$$

Where:

- Ms<sub>i</sub> = The mean score to the environmental problem i
- X<sub>j</sub> = The opinion scores such as 0, 1, 2, 3 and 4. Score 4 indicates very worried, 3 indicates worried and 2, 1, 0 indicates not worried, not very worried and no opinion as well
- N<sub>ij</sub> = The number of respondents who give the problem i for the score X<sub>j</sub>
- N = Total number of respondents

**RESULTS AND DISCUSSION**

Table 1 represents number and percentage of the respondents who gave specific score to each environmental problem. For each environmental problem,

respondents (contractors) are asked to give their opinion by selecting one of five scores such as 0, 1, 2, 3 and 4 For the environmental problem of air pollution, most of the contractors (about 63%) indicates that they are worried, followed by 22.3% indicate very worried, 10% not worried and only 4.6% not very worried about the air pollution in Malaysia. The findings also reveal that majority of the contractors are worried for all environmental problems as mentioned in Table 1; 63% for air pollution, 56.2% for deforestation, 55.4% for lack of separate construction waste landfill, 54.6% for soil erosion, 53.1% for noise pollution, 50.8% for both water pollution and lack of sanitary landfill, 49.2% for supply of natural resources reduction and 46.2% for ground water contamination as well.

The study also shows mean score to examine the relative importance of each environmental problem in Malaysia (Table 1). The results found that the highest mean score is 3.06 for deforestation problem and the lowest mean score is 2.64 for lack of separate construction waste landfill, which indicate the most and least important environmental problem according to the contractor's perception. Contractor's perception to the most important environmental problem includes water pollution, air pollution, ground water contamination as well as soil

Table 1: Contractors' perception to the environmental problems

Environmental problems	Very worried		Worried		Not worried		Not very worried		No opinion		Total response		Mean score
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Air pollution (e.g., construction dust, open burning)	29	22.3	82	63.1	13	10.0	6	4.6	-	-	130	100	3.03***
Water pollution (e.g., from soil on construction sites)	39	30.0	66	50.8	18	13.8	7	5.4	-	-	130	100	3.05***
Noise pollution (e.g., from operations on construction sites)	23	17.7	69	53.1	28	21.5	10	7.7	-	-	130	100	2.81***
Ground water contamination (from illegal dumping or landfill)	40	30.8	60	46.2	22	16.9	7	16.9	1	0.8	130	100	3.01***
Deforestation (from land clearing activities)	35	26.9	73	56.2	17	13.1	5	3.8	-	-	130	100	3.06***
Soil erosion (expansion of industrialization or urbanization)	30	23.1	71	54.6	23	17.7	6	4.6	-	-	130	100	2.96***
natural resources (such as fuel, timber and sand supply)	28	21.5	64	49.2	32	24.6	5	3.8	1	0.8	130	100	2.87***
Reduction in supply of natural resources (such as fuel, timber and sand supply)	21	16.2	66	50.8	31	23.8	12	9.2	-	-	130	100	2.74***
Lack of sanitary landfill	15	11.5	72	55.4	27	20.8	13	10.0	3	2.3	130	100	2.64***
Lack of separate construction waste landfill	-	-	-	-	-	-	-	-	-	-	130	100	-
Other problems	-	-	-	-	-	-	-	-	-	-	130	100	-

\*\*\*Indicates significant at 0.01 level

erosion. On the contrary, contractor's perceptions to the least important environmental problem are reduction in supply of natural resources, noise pollution, lack of sanitary landfill. It shows that contractor's perceptions to the environmental problems are significantly different at 0.01 level among contractors in the construction industry. This result is also echoed by other studies in Malaysia and other countries of the world. Awang *et al.* (1998) also demonstrated that in Malaysia, many environmental issues and problems have been identified requiring urgent attention. The list includes air pollution, water pollution, soil erosion, loss of natural habitats for both endemic and endangered fauna and flora, solid waste disposal and animal husbandry waste management. Erdogan (2005) showed that waste problems seemed to be serious environmental problems at the Olimpos National Park in Turkey. Poon (2000) reported that the waste generated by the building and demolition of construction projects forms a large proportion of environmental waste in Hong Kong. Uher (1999) suggested that construction activities have a significant impact on environment across a broad spectrum of off-site, on-site and operational activities. Off-site activities concern mining and manufacturing of materials and components, transportation of materials and components, land acquisition and project design. On-site construction activities relate to the construction of physical facility, resulting in air pollution, water pollution, traffic problems and generation of construction wastage.

### CONCLUSION

The findings of the study reveal that contractors are concerned about all components of the environment and perceived the most important environmental problems which are deforestation, water pollution, air pollution and ground water contamination as well as soil erosion. In response to these problems, government and other stakeholders (CIDB or Master Builders Association) should implement various actions and measures to alleviate the environmental problems. In addition, contractors and developers also need to be included environmental protection measures in their construction projects as Malaysia has experienced phenomenal economic growth in the last two decades. It has undergone a major structural transformation, moving from a agriculture to manufacturing-based economy, with significant social changes. This rapid development has brought about significant impacts to the natural environment. Development, therefore, cannot confer lasting benefits unless environmental considerations and related ecosystems are protected as integral parts of development planning and decision making. This can only

be done by formulating appropriate policies and programmes to ensure development proceeds hand in hand with sound management of the environment.

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