

Socio-Economic Studies of Scavengers in Malaysian Landfills

Aida H. Z, Firuza B. M, Fauziah S.H, *University of Malaya, 50603 Kuala Lumpur, Malaysia*

CONTACT

Aida Husna Zahariman
Institute of Biological Science,
Faculty of Science, University of Malaya,
50603 Kuala Lumpur, Malaysia
Email: aidanp@um.edu.my

EXECUTIVE SUMMARY

Accelerating pace of urbanization has resulted with increasing generation of municipal solid waste (MSW). Approximately 90% of these wastes are sent to landfills without any material recovery process. As a result, it creates opportunity for scavenger to retrieve valuable materials from the waste stream. This is observed in most landfill in Malaysia where scavengers collect the recyclables as their source of income. This paper examines the socio-economic of scavengers and describes the management of scavenging activity in three landfill types namely Jeram Sanitary Landfill, Bukit Beruntung Open Dump and Dengkil non-sanitary Landfill, in Selangor, Malaysia. Jeram Sanitary Landfill and Dengkil non-sanitary Landfill were managed by Worldwide Holdings Pvt Ltd. while Bukit Beruntung Open Dump was managed by Hulu Selangor Municipal Council.

The study is based on direct field observations and from the social survey among scavengers of the three landfills. Results indicate that, 71% of the active scavengers in the study area are foreigners, mostly Indonesians and they are full time scavengers. 85% of them choose to scavenge waste in landfill because they lack qualification for other job opportunities. On the other hand, 15% choose to be involved in scavenging activity because it generates higher income for them compared to other jobs. From the observations, the landfill management neither provide proper personal protective equipment (PPE) to the scavengers nor strictly enforce the usage of PPE despite the knowledge that PPE is a good method in reducing health risks among the scavenger. Also, the management in all types of landfill does not provide the necessary technical training for the scavengers. This resulted with the scavengers facing risks of health hazard due to their lack of knowledge and ignorance. Thus, the authorities should have better policies and legislations in landfill management in regards to the involvement of scavengers. It can be concluded that the presence of landfills with its 'rich' resources namely recyclables create the opportunity for the scavengers to improve their socio-economy. Yet, necessary precautions need to be taken by the authorities in order to prevent health risk to the scavengers.

INTRODUCTION

Solid waste management (SWM) is an important environmental health service, and is an integral part of basic urban services. The disposal of waste became problematic with the rise of towns and cities where large numbers of people started to congregate in specific areas. Selangor is the fastest growing economy and most populated state in Malaysia. The population of Selangor in 2010 is about 5,411,324 contributing approximately 20% of Malaysian population. The average annual population growth in Selangor is 3.17% and the majority live in the urban areas (Preliminary Count Report, 2010). In tandem with the growing urban population, the production of solid waste is also increasing. In Selangor state, the highest percentage of MSW is putrescible waste at approximately 46%, followed by plastic and paper at 15% and 14%, respectively (Fauziah *et al.*, 2004). With 3% (wt) annual increase rate of municipal solid waste (MSW), Malaysia generates approximately 30,000 tonnes of MSW covering 83% of the country's waste generation (Fauziah, 2009) and almost 98% of this MSW ended up in landfills (Fauziah *et al.*, 2004). This phenomenon creates opportunity to the scavenger to retrieve the recyclables materials in the landfill.

Solid waste management (SWM) usually consists of both the formal and the informal sectors. Emenda and Vilas (2010) found that most urban poor and marginalized social groups' are involved in informal waste recycling. They use waste picking as a source of income, and often as their only survival strategy. In an unequal society, informal waste recycling will continue in the future. Physical characteristics of cities, socio-economic conditions and policy related to urban environmental management are several factors which drive the existence of the informal sector (Medina, 2000).

The authorities in many countries do not realize the significant social, economic and environmental benefits of the recycling activities carried out by scavengers. Thus, designing of MSWM policies and plans fails to address the roles of scavengers. Alternatively, when scavenging is considered in MSWM plans, one of the objectives within the plan is to remove the activities. Most studies report that human scavengers constitute to the disadvantaged and vulnerable segments of the population. Third World scavengers face multiple hazards and problems due to their daily contact with garbage. Scavengers are usually associated with dirt and disease, whom symbolized backwardness, and even as criminals (Medina, 2000). They survive in a hostile physical and social environment. In Colombia, the so-called 'social cleansing' campaign conducted by some paramilitary groups, considers scavengers as 'disposable' and can be harassed, kidnapped and expelled from certain neighborhoods and towns (Medina, 2000).

According to Medina (2000), the scavengers in Mexico City dumpsite have a life expectancy of 39 years, while the general population's is 67 years. Another study, conducted in Port Said, Egypt, found that the scavenger community had an infant mortality of 1:3 (one death of an infant under 1 year out of every three live births), which is several times higher than the rate for the region as a whole (Medina, 2000). The prevalence of enteric and parasitic diseases was also higher within the scavenger community than in the region (Medina, 2000). In Cairo, one in four babies born in the scavenger communities dies before reaching their first year (Medina, 2000).

There are more than 35 diseases identified in scavenger communities in Manila which areas lack of refuse collection and proper sanitation. The diseases including diarrhea, typhoid fever,

cholera, dysentery, tuberculosis, anthrax, poliomyelitis, skin disorders, pneumonia and malaria (Haskarlianus *et al.*, 2007). Occupational health risks are also evident among the scavenger community. These risks sourced from the waste. The risk appears while conducting the scavenging activity such as collecting, processing, recycling and disposing the waste (Agamuthu, 2010). In 1984 about 80% of the hazardous waste in United State was dumped into landfill even though there are many available methods to manage the hazardous waste (Piasecki, 1984). As a result, it affected human health and ecological system (Piasecki, 1984).

The socio-economic aspect of scavengers deserves careful study as to determine the factor which encourages them to be a part of the waste management systems that striking a balance between quality of service and cost effectiveness. This challenge is particularly significant for developing countries, where resources are limited but urbanization is occurring rapidly. Based on the above view, this research is designed to study the socio-economic aspect of the scavenger in disposal sites in Malaysia. This study is crucial as government and public fail to pay any attention to the significant existence of scavenger in the community.

MATERIAL AND METHOD

Questionnaire Survey

Social survey was distributed to 30 respondents in each study area. Questionnaires were administered randomly to scavengers who recover materials from three types of landfill: (a) sanitary landfill, (b) non-sanitary landfill and (c) open dump. 66 questions were prepared. The questionnaire solicited for information on the following:

- i. Part A: Demographic Characteristic
- ii. Part B: Socio-economic status
- iii. Part C: Occupational, Safety and Health
- iv. Part D: Awareness Towards 3R Activities

A structured, yet simple, questionnaire was designed, pre-tested, and modified to collect data of scavengers' opinion on the problems at the landfills and on the relevant criteria in working at landfills. The questionnaire included 'Yes' or 'No' questions if the participant knows the raised problems from landfill in general. If the answer was 'Yes' the person was asked to mention two or three problems. This question was required to satisfy the objectives.

Analysis of Data

The Statistical Packages for Social Sciences (SPSS) program was used in the analysis. Attributes in the study are gender, age, race, education, marital status, religious affiliation, income, house category, and the type of housing unit.

RESULT AND DISCUSSION

ANALYSIS OF RESULT

Results obtained indicated that all three landfills namely sanitary landfill, controlled dump and open dumps attract scavengers to retrieve the valuable materials. The scavengers found in these landfills vary in age, citizenship and races. Table 1 depicts the gender of scavengers in the study area.

Table 1: Percentage of the Gender in Three Types Landfill

Gender/ Landfill	Jeram (%)	Bukit Beruntung (%)	Dengkil (%)
Male	73	77	53
Female	27	23	47

Based on Table 1 male scavengers are more dominant in two landfill; Jeram (73%) and Bukit Beruntung (77%), while in Dengkil landfill, both genders are almost equal though male scavenger are 6% more than the females. The male scavengers are more than the female scavengers probably due to the risk of the job which involved rushing after garbage trucks and fighting over recyclable materials.

Table 2 depicts the nationality of scavengers in three types study area.

Table 2: Percentage of the Nationality of Scavengers in Three Types of Landfill

Nationality / Landfill	Jeram (%)	Bukit Beruntung (%)	Dengkil (%)
Malaysian	0	87	0
Indonesian	100	13	100
Bangladeshi	0	0	0
Others	0	0	0

In Jeram and Dengkil, all (100%) of the scavengers are Indonesian. While in Bukit Beruntung landfill, majority (87%) of them are native Malaysian and the rest (13%) are Indonesian. As know, Jeram and Dengkil was managed by Worlwide Holdings Sdn. Bhd. This private company managed to get only Indonesian workers to work there. The scavenging jobs in Malaysia are monopolized by foreigners especially Indonesian, and the locals are merely a part of this community. The foreigners came to Malaysia to find a job to earn for a living. Work as a scavenger is less admired by the local people because they have to face hot weather, smelly odour, and dirty environment. This is the condition of their working place where they have to find recyclable materials. Since it is hard to get local people to work as scavengers that recycling companies decide to hire foreign labour to do the scavenging activity which is to find recyclable matters in the landfills. While in Bukit Beruntung dumpsite the municipality allow the public to enter to the dumpsite. The native villagers nearby use this opportunity to find the valuable materials there and convert it to coins. Most of the native scavengers there do not have a permanent job and do the scavenging activity as a part time job to earn more income for living.

Table 3 depicts the marital status of scavengers in three types study area.

Table 3: Percentage of Marital Status of the Scavengers in Three Types of Landfill

Marital status / Landfill	Jeram (%)	Bukit Beruntung (%)	Dengkil (%)
Married	77	67	97
Single	13	33	3
Widow	10	3	0
Divorcee	0	0	0

In the table above, majority of the scavengers in all of three types landfill are married. Jeram landfill shows 77% of their scavengers are married, Bukit Beruntung about 67% and Dengkil are 97%. Most of them are married and have children and wife of their own. To meet the family needs, they do the scavenging. Few of them are single but they have based family relationship with others scavenger. Most of single scavengers (in Bukit Beruntung) are child and have a parents do the scavenging in that same dumpsite. While in Dengkil and Jeram most of them are adult and have their own wife and works together with them at that landfill.

Table 4 depicts the income status of scavengers in three types study area

Table 4: Percentage of Income Status of the Scavengers in Three Types of Landfill

Income (RM) / Landfill	Jeram (%)	Bukit Beruntung (%)	Dengkil (%)
0-100	0	3	3
101-200	0	3	0
201-300	3	10	77
301-400	0	17	20
401-500	3	7	0
501-600	10	3	0
601-700	10	17	0
701-800	37	27	0
801-900	3	3	0
901-1000	17	7	0
1001-2000	17	3	0

The 17% of scavenges in Jeram landfill can get the income up to (RM 1001-RM2000). This is the maximum income they can get by selling their retrieve material in that landfill. In Bukit Beruntung only 3% of the scavenger can get this highest income, while in Dengkil nobody can achieve this income. The range of income in Jeram is in between of RM201-RM2000. In Bukit Beruntung, the ranges of income are between RM0-RM2000 and in Dengkil from RM0-RM400. The income status of scavengers depends on the type of landfill they scavenge. Jeram receive

municipal solid waste (MSW) especially household waste. These give opportunity to scavengers to retrieve recyclable materials in that landfill. While, Dengkil also receive MSW but most of the waste goes there are agro waste which cannot recycle by scavengers. The income status in Bukit Beruntung are varies because it depends to the scavenger's effort. Most of scavengers in Bukit Beruntung do the scavenging activity as a part time job. They have other job such as gardener, students and others out there.

Table 5 depicts the scavenger's age in three types of landfills.

Table 5: Percentage of Scavenger's Age in Three Types of Landfill

Age (years) / Landfill	Jeram (%)	Bukit Beruntung (%)	Dengkil (%)
<15	0	30	0
16-25	10	30	27
26-35	53	20	63
36-45	27	13	10
46 and above	10	7	0

From table above, the highest percentage of age working in Jeram and Dengkil landfill range from 26-35 which about 53% in Jeram and 63% of them from Dengkil. From the table also, we can see there is no scavengers work in both landfill comes from age below 15. While, Bukit Beruntung landfill is different from others landfill because majority of scavengers are comes from age below 15. Most of the scavengers are in adult age. The age of scavengers working in landfill is depends on the management of the landfill. In Jeram and Dengkil, the management are strictly prevent the children scavengers to work there but in Bukit Beruntung they allow to everyone to retrieve material there. No enforcement in Bukit Beruntung due to scavenger's age.

Table 6 depicts the health problem faced by scavengers in three type of landfills.

Table 6: Percentage of Health Problem Faced by Scavengers in Three Types of Landfill

Religion / Landfill	Jeram (%)	Bukit Beruntung (%)	Dengkil (%)
Yes	40	60	73
No	60	40	27

Based on the table above, Dengkil landfill have recorded the highest percent (73%) of the scavengers faced the health problem followed by Bukit Beruntung (60%) and Jeram (only 40%) of the respondents in Jeram landfill. This question asked the health problems they faced since they were involved with the scavenging job. The disease they always get such as, fever, headache, asthma, cough etc. Diseases that are mostly infecting the scavengers are fever, headache, asthma, cough, high blood pressure, skin allergy, nerve pain and other known diseases. These diseases are caused by exposure to dirt, poisonous gas from the waste

decomposition, and there is no certain cloth or equipment to protect them from direct contact with the wastes.

CONCLUSION

This paper concludes that scavengers can earn high income in landfill. The income of scavengers based on type of landfill and their effort to retrieve the valuable material. Even though scavengers can get high income they also exposed to high risk to get disease from landfill due to hazard such as methane gas and probable accident. The hazard and risk analysis in landfill are not properly done by all of the management of landfill. This is because they not strictly enforce the workers to use PPE and no technical training given to them about that.

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