

Predicament of Community Solid Waste Management in Khong Chai Pattana Municipality Khong Chai District Kalasin Province

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Abstract: This research was having a purpose to predicament of community solid waste management in Khong Chai Pattana Municipality Khong Chai District Kalasin Province. The sample composed of 310 household agents in Khong Chai Pattana Municipality Khong Chai District Kalasin Province which have been selected by a multi-stage sampling technique. Constructed questionnaire was used to collect data and also was assessed for its reliability. The data was analyzed by mean (\bar{x}) and Standard Deviation (SD). The results of this study showed that type of community solid waste as organic waste was at maximum (74.84%), the average quantity of community solid waste as 5.03 kg/household/day or 1.18 kg/person/day, three community solid waste many topmost average quantities first are Loa Dang community (8.19 kg/person/day), Kut Khong Chai community (6.08 kg/person/day) and Don Kean community (6.07 kg/person/day) and showed that knowledge was at the high level, attitude practice and participation on solid waste management was at the medium level.

Key words: Knowledge, attitude, practice, participation, solid waste management, municipality

INTRODUCTION

The management of solid waste from households is important for various reasons. One of these is that landfill space is becoming a scarce resource in many countries. More profound is perhaps the concern for ecological damage from hazardous components in the waste collected by the municipality will not automatically alleviate the concern about the spread of hazardous waste into the environment. To the contrary; thoughtless construction of waste handling tariffs might even have the effect of encouraging illicit dumping, burning or other improper disposal (Sterner and Bartelings, 1999).

Municipal Solid Waste (MSW) management is a nonexclusive and nonrivalled service that is once, it is provided to some portion of the community, it benefits the overall public welfare and any resident can enjoy the benefit of the service without diminishing the benefit to anyone else.

Generally, it is not feasible to exclude from service those who do not pay since public cleanliness and safe waste disposal are essential to public health and environmental protection. Being nonexclusive, nonrivalled and essential renders MSW management a public service for which the local government is typically responsible. This does not mean that local government has to

accomplish the task entirely. It is important to note that privatizing some aspects of MSW services does not take away the need for local government to be fully responsible for these services. In this context, a number of financial and nonfinancial factors should be addressed in developing policies and strategic plans for private sector participation in MSW services. These include but are not limited to cost recovery, finance, economies of scale, cost, efficiency and public accountability, institutional management and legislation (Massoud and El-Fadel, 2002).

From the municipal waste management perspective, reverse logistics should solve the problems related to the recovery and recycling of containers, bottles, packages and other forms of waste, as well as the design, management and control of systems oriented towards the return and treatment of disposable goods (Bautista and Pereira, 2006).

Therefore, the researcher as municipality officer had studied predicament of community solid waste management of household agents by surveying to solving those problems.

The purposes of this research was to study predicament of community solid waste management in Khong Chai Pattana Municipality Khong Chai District Kalasin Province.

MATERIALS AND METHODS

Collected data of type and quantity of community solid waste in Khong Chai Pattana Municipality Khong Chai District Kalasin Province by:

- Garbage collection bags
- Weighing apparatus
 - Size 2 kg
 - Size 10 kg

The quantities of waste are measured mainly by weighing vehicles delivering the waste to landfills or to sorting and composting facilities. In Khong Chai Pattana, municipality in small cities is most often collected by several private waste collection place who deliver it for disposal in different installations.

The sample of this research were 310 household agents in Khong Chai Pattana Municipality Khong Chai District Kalasin Province which had been selected by a multi-stage sampling technique. The contents of this research were importantly divided into five sections which are:

Section 1: demographic factors are three items such as ages, education level and gender of the household agents.

Section 2: Knowledge on community solid waste management is two choices which are (yes or no) in the amount all together of 20 items.

Section 3: Attitude on community solid waste management in the rating scale of 5 is in the amount all together of 20 items.

Section 4: Practice on community solid waste management in the rating scale of 5 is in the amount all together of 18 items.

Section 5: Participation on community solid waste management in the rating scale of 5 is in the amount all together of 34 items.

They were examined by five experts for an evaluation form IOC which is indicated that they were between 0.05-1.00. Improving and collecting them which according to the five expert's suggestions and opinions which led them to find out without the 30 household agents sampling random group, it's indication was discrimination value that also using in the point of item total correlation by choosing the items with positive discrimination value which having a higher score than 0.02, the discrimination value in range of 0.02-0.80,

the reliability value that using the Cronbach alpha coefficient and the reliability is equally to 0.70. Then they were analyzed for collecting data by mean (\bar{x}) Standard Deviation (SD).

RESULTS AND DISCUSSION

The results of this study showed the average quantity of community solid waste in Khong Chai Pattana Municipality Khong Chai District Kalasin Province as 5.03 kg/household/day or 1.18 kg/person/day that type of community solid waste as organic waste was at maximum (74.84%) and minimum as Hazardous waste (2.46%) (Table 1).

Quantity of community solid waste in Khong Chai Pattana Municipality Khong Chai District Kalasin Province that Lao Dang (7) community have higher most average quantities (8.19 kg/person/day) and Tha Hae (1) community have lower most average quantities (3.28 kg/person/day) (Table 2). The major findings revealed as following: the household agents have shown their total knowledge on community solid waste management at high level (\bar{x} = 16.32); the maximized mean showed that utilization of waste at high level (\bar{x} = 18.94) and the minimized mean showed that source of the solid waste at medium level (\bar{x} = 13.20) (Table 3) which is

Table 1: Type of community solid waste

| Types of waste | Weigh of waste kg/household/day | Percentage |
|----------------|------------------------------------|------------|
| Organic | 3.77 | 74.84 |
| General | 0.29 | 5.95 |
| Recycle | 0.84 | 16.75 |
| Hazardous | 0.12 | 2.46 |
| Total | 5.03 | 100.00 |

Table 2: Quantity of community solid waste

| Community | Village no. | Quantity of waste kg/household/day | Rank |
|----------------|----------------|---------------------------------------|------|
| Tha Hae | 1 | 3.28 | 11 |
| Don Kean | 2 | 6.07 | 3 |
| Kut Khong Chai | 3 | 4.67 | 7 |
| Non Khwao | 4 | 3.41 | 10 |
| Non Khwao | 5 | 4.07 | 8 |
| Lao Yai | 6 | 5.08 | 5 |
| Lao Dang | 7 | 8.19 | 1 |
| Kut Khong Chai | 8 | 6.08 | 2 |
| Noi Samchieng | 9 | 5.42 | 4 |
| Tha Hae | 10 | 4.98 | 6 |
| Chad | 11 | 4.04 | 9 |

Table 3: Knowledge on community solid waste management

| Knowledge | \bar{x} | SD | Level |
|----------------------------|-----------|------|--------|
| Source of the solid waste | 13.20 | 0.22 | Medium |
| Type of solid waste | 15.64 | 0.26 | High |
| Impact of solid waste | 17.43 | 0.14 | High |
| Utilization of solid waste | 18.94 | 0.09 | High |
| Choice of waste management | 16.41 | 0.26 | High |
| Total | 16.63 | 0.08 | High |

0.00-6.99 = Low; 7.00-13.99 = Medium; 14.00-20.00 = High

Table 4: Attitude on community solid waste management

| Attitudes | \bar{x} | SD | Level |
|--|-----------|------|--------|
| To help collect garbage, we have a potential value of social | 3.98 | 0.84 | High |
| Garbage collection is helping communities clean | 4.25 | 0.72 | High |
| Garbage collection will make the appropriate solid waste management is effective | 3.94 | 0.73 | High |
| Waste separation is unobjectionable | 3.60 | 0.92 | Medium |
| Happy when sorting garbage | 3.44 | 0.83 | Medium |
| Not objectionable to transform into solid waste | 3.59 | 0.81 | Medium |
| Desalination of solid waste by bringing the invention as home appliances, we take pride in skill | 3.77 | 1.00 | High |
| The recycled items to turn into a value of be used as the new production factory | 3.44 | 0.97 | Medium |
| Approve the use of recyclable materials from waste | 3.52 | 0.82 | Medium |
| Compost from garbage, not something dirty | 3.41 | 0.92 | Medium |
| Fermentation of biological waste water is nasty | 3.29 | 1.04 | Medium |
| When you are happy to take part in the solid waste management with the government | 3.80 | 0.90 | Medium |
| Total | 3.67 | 0.53 | Medium |

1.00-2.33 = low; 2.34-3.67 = Medium; 3.68-5.00 = High

Table 5: Practice on community solid waste management

| Practice | \bar{x} | SD | Level |
|----------|-----------|------|--------|
| Reduce | 3.06 | 0.68 | Medium |
| Reuse | 3.78 | 0.83 | High |
| Repair | 3.07 | 0.98 | Medium |
| Recycle | 3.90 | 0.91 | High |
| Reject | 3.03 | 0.96 | Medium |
| Total | 3.36 | 0.57 | Medium |

1.00-2.33 = Low; 2.34-3.67 = Medium; 3.68-5.00 = High

accorded to Rafia *et al.* (2010) who find that majority of the respondents (61.94%) stated that they have knowledge about recycling of solid waste.

The attitude on community solid waste management showed their total at medium level ($\bar{x} = 3.67$); the maximized mean showed that garbage collection is helping communities clean at high level ($\bar{x} = 4.25$) and the minimized mean showed that fermentation of biological waste water is nasty at medium level ($\bar{x} = 3.29$) (Table 4) which is accorded to Dimitriou who find that knowledge attitude and suggestion for reducing solid waste on Greek citizen showed gains in awareness of waste management. The practice on community solid waste management showed their total at medium level ($\bar{x} = 3.77$); the maximized mean showed that recycle at high level ($\bar{x} = 3.90$) and the minimized mean showed that reject at medium level ($\bar{x} = 3.03$) (Table 5) which is accorded to Rijal and Deshpande (2007) who find that an attempt has been made to project Knowledge, Attitude and Practice (KAP) level of awareness in respect of different health professionals of HCIs and others individuals involved in task of handling of biomedical waste in Kathmandu valley.

The participation on community solid waste management showed their total at medium level ($\bar{x} = 3.08$); the maximized mean showed that the benefits at medium level ($\bar{x} = 3.49$) and the minimized mean showed that the evaluation at medium level ($\bar{x} = 2.91$) (Table 6) which is accorded to Minn *et al.* (2010) who find that promoting people's participation in Myanmar showed the current participatory approach which mainly focuses on raising awareness or imparting environmental education

Table 6: Participation on community solid waste management

| Participation | \bar{x} | SD | Level |
|---------------|-----------|------|--------|
| Decision | 2.99 | 1.04 | Medium |
| Practice | 2.92 | 0.92 | Medium |
| Benefits | 3.49 | 0.63 | Medium |
| Evaluation | 2.91 | 1.04 | Medium |
| Total | 3.08 | 0.82 | Medium |

1.00-2.33 = Low; 2.34-3.67 = Medium; 3.68-5.00 = High

is not adequate to maximize the people's participation in Myanmar due to persistence of institutional and social constrains.

CONCLUSION

From this research, results showed the average quantity of community solid waste in Khong Chai Pattana Municipality Khong Chai District Kalasin Province as 5.03 kg/household/day or 1.18 kg/person/day that type of community solid waste as organic waste was at maximum (74.84%) and minimum as Hazardous waste (2.46%); knowledge on solid waste management was at the high level, attitude, practice and participation on solid waste management were at the medium level.

RECOMMENDATIONS

Based on the findings of this study, several recommendations can be made to improve the status of municipal solid waste management in the Khong Chai Pattana Municipality. But the most important is budget allocated for municipal solid waste management in most municipalities.

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