

**SOLID WASTE MANAGEMENT IN PATTANI WATERSHED , SOUTH
THAILAND BY COMMUNITY PARTICIPATION**

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Abstracts

Waste as a major cause of pollution and ill environment in developed cities with dense population was well known. Pattani Watershed, South Thailand is also experiencing the gradual increase of public waste. In this study, processes and factors relating to solid waste management with participation of communities in Pattani Watershed was evaluated. Data were collected from reviewing literature and observation from interview and community participation. It was thus found that the overall percentage of the learning was 41.1 with an excellent level was observed in the upper area. Other percentages for utilization and understanding of effective microorganisms were of 96, and 45.17, respectively. Quantity of and factors relating to community solid waste after pre- and post-training as for the upper area was 2.352/2.202 kg/day, and for the middle and lower area were 1.892/1.609 kg/day, and 2.426/2.324 kg/day. Cognitive of solid waste management included dangerous and microbial waste. The efficiency of solid waste management was observed by mean of reduction of organism waste and waste recycling. Community was found to reduce their waste by mean of screening. Participation of solid waste management was found have an impact on reduction of household electricity use, on using tea and coffee bag refills, and reuse of newspapers by producing paper bags.

Key words: Solid waste, Community participation, Pattani watershed.

INTRODUCTION

Garbage issue becomes an environmental problem that all parties involved must aware of its importance. As a community problem, its effective management needs mutual actions from such community at all levels, locally to nationally. Without proper and effective management, the issue is even becoming deteriorated as a result of rapid socio-economic development. As examples, the rapid increase of the population, the new technology products being used in daily life and the higher living standard also increase waste and garbage more and higher. Department of Pollution Control of Thailand has reported that solid waste increased in 1993 at rate per day of 30,640 tones and at 39,225 tons/day in 2002, and theirs its estimated rate was 1.2 percent per year. With such increase rate, it has been estimated that solid waste per day would be at 47,000 tons by 2012. Making percentage of yearly increase by 2.0 and with total increase of 700 to 900 tons.

As the causes and problems of solid waste are reconsidered, its main cause is human behavior. Human development seems to be of top priority in an attempt to solve these problems. Knowledge regarding the correct practice of how to handle and manage waste should be understood by everyone regardless of their social status or profession. Unilaterally, public sectors from local government and organizations like Bangkok Metropolitan Administration and Sanitation District never successfully manage these waste issues. Therefore the government is setting the 1997-2016 National Policy and Plans for Environmental Enhancement and Conservation. This policy pays much more focus on people role and participation. Thus the

attention issues of waste management are thus not only the state concern but also serious public shared actions.

Waste management is a duty of every people. Hand-to-hand helping is the only way to correctly solve the problem. One approach is by encouraging anyone who is making solid waste to be involved in solid waste management instantly and directly. Giving an opportunity to local residents to participate in waste management implies fixing the problem from the root cause. This task may be done by proposing volunteers and their leader from the relevant area, to educate the public solid waste management in the community, and to create the public awareness about waste management.

Waste management process by engaging the communities inhabiting on riverside of Pattani watershed is, therefore proposed to study their involvement as a result of learning, understanding, and correct attitude and behavior owning. After the setting learning processes, they are subjected to be evaluated in their capability of proper waste management. Such learning processes include various learning activities, workshops, brain-storming session, and self assessment and evaluation of this proposed project or programs. Thus, research project is, proposed to (1) establish waste management process with community participation, (2) to preliminarily evaluate results of the established waste management process, and (3) to study conditions and factors that influence the established waste management process.

RESEARCH METHOD

Research process consisted of live and qualitative data-collecting tool which were focus group, participant observation, interview, and brainstorming. Quantitative data collection was done using questionnaire for evaluating knowledge and perception, behavior and attitude on the waste management before and after the launch of the process. This questionnaire was of 4 parts. Part 1 was on general basic information of target group. Part 2 was 30 yes/no questions on solid waste-managing knowledge and perception, and set 1, and 0 for right, and wrong answer score. Part 3 was 3-choice questions about view on solid waste management behavior with 3 commenting threshold levels to be chosen were of always, seldom, never for score of 3, 2, 1. Part 4 was 5-choice questions on view about solid waste management attitude with 5 commenting threshold levels to be chosen were of very strongly agree, strongly agree, moderately agree, minimally agree, disagree for scores of 5, 4, 3, 2, and 1, respectively. Quantitative questionnaire of solid waste management participation for participating communities in Pattani watershed was 342 samples. Before using this particular tool, it was reviewed by experts, and the content accuracy, completeness, appropriateness, research goal-objective consistency were perfectly re-adjusted.

Data analysis. Qualitative and quantitative data analyses were done using Typological Analysis and analysis of data deriving from questionnaires. Typological analysis used classified data from general data, activity data, and learning results. Analysis Induction was also used, and the activities and events in the communities were constantly compared so that the correlation and synthesis of information were completely drawn out. Quantitative data analysis used questionnaire data with its conclusion and description. Means scores of target groups pre- and post-assessment were statistically analyzed. This encompassed the use of arithmetic means, standard deviation, and comparison of the means difference. Summation and discussion was finally presented.

RESULT AND DISCUSSION

Knowledge and perception about waste and its management indicated that the target groups have understood various issues of waste management. To recall those questions, they were, firstly, hazardous wastes such as insecticides, flashlight battery, car battery, lamp, hair spray with percentage score was 93.27. Secondly was organic wastes including vegetable wastes, rotten

fruits, food wastes, meat wastes, and leaves with significant of 91.22%. Whereas 90.94% was an account for inappropriate solid waste disposal that led to the forming of growth reservoir of disease vectors or vehicles and ultimately caused illness. As much as 90.05% fell to issue of partitioning solid wastes to regain their uses and benefit as a mean to reduce waste volume. Respondents 89.47% had perception about the 4-class solid wastes, general waste, recycling wastes, organic wastes and hazardous waste. Other respondents (87.71%) recognized the fact that wastes that were disposed on any streets and other places of community settlement implying their lack of responsibility and caused unlovely surrounding. Perception that general waste included milk boxes, plastic candy boxes, detergent plastic bags, food debris-contaminating plastic bags, instant noodle wrappers, foam wrappers, food debris-contaminating foil was in 86.55%. Respondents 65.79% understood that disposing garbage into water a little by each community member did not likely to cause water pollution. Growth of population as being unrelated with the solid waste increment was 61.11%. Only 39.77% had perception that wastes of food, vegetable and fruit debris mostly originated from bazaars only. The finding that respondent people having better understanding was not abnormal for these people were inquired after educating process. However, this finding opposed to that of Noppavan and co-workers (2007), who studied knowledge, awareness for garbage troubleshooting in communities of Kohchai, of Patong, and Pratoochai, Puket province, and showed that those people were lack of perception as per household level. Our finding also contradicted with that of Saman (2003) who studied the involvement of the community in solving the problem of solid waste, study case of Srisamran, Wanghin district, Sri Saket province. His finding showed that the community issue of not disposing and partitioning practices was a lack of knowledge and perception in waste management.

Knowledge and perception about solid waste management found the target groups had an understanding of various solid waste management issues subjected to. Those issues in order of descending were that of effective and efficient solid waste management being one that was reduced the waste volume at its originating sources (93.57%), of inorganic waste being able to use as fertilizer for fermentation. (90.64%), of recyclable waste being not useful for reprocessing and producing new product as its self-disposition limiting its usage (90.35%), of reducing waste at its originating source being implying for decrease of waste by producers including those living in households (86.84%) of reuse being referred to the use of water which signified reuse or repeated use of certain goods such as use sweet water bottle to refill drinking water (76.90%), of refusing purchase of refill products such as detergent, liquid soap, dishwashing, being a mean to reduce the waste volume at its originating sources (76.30%), of prior disposal of solid waste being not required waste sorting for its difficulty in storage and its high cost in handling (65.50%), of general waste being waste readily to isolate and to embed into disposal waste landfill site (64.91%) of hazardous waste being readily recycled (56.43%), of garbage volume being only preferred to trash provision and handling collection (52.33%), and of processing equipment or technology being a limitation of our waste reuse (29.82%). These findings showed correspondent with that of Sunee and co-workers (2000), who studied the efficient community waste management and showed that effective waste management model was the one that encouraged the use of technology and materials for reducing solid waste, and promoted the establishment of the industrial waste exchange stations and waste recycling industries

Regarding opinions on the reduction of solid waste volume, percentage, mean and standard deviation level showed varied results. Respondents very strongly agreed on the fact that everyone in the community had his/her part in helping solid waste volume reduction (46.8%). Successful sorting of waste is done from household accounted for 43.6%. Collecting glass bottles, paper for sale is a humiliating practice scored 34.8. Next results were that of respondents agreed on opinions, bringing garbage back for reuse and getting extra benefits is also a good practice

(48.2%), wise consumer with selecting goods as per need is a mean for reducing solid waste (43.9%), sorting solid waste being able to reduce waste volume (42.1%), and purchase of waste is one condition of waste sorting (32.5%). Opinions were disagreed on sorting waste being not a duty of people (43.0%), reuse the items such as glass bottles, paper boxes, being dirty, non-hygienic practice (37.7%), and cooperating in waste reduction being is for current popularity (35.7%). Finding further showed that minor opinions were on solid waste management, majority was of strongly agreed opinions. Our findings were coincident with that of Suphakhawadee (2002), who studied factors affecting on participation in solid waste management and disposition in the Sub-district Administrative Organization; case of Banped sub-district, KhonKaen province. Her finding was support in minimizing solid waste in continuity required public information to be promoted constantly.

Further findings showed that most respondents had involved in solid waste management practices, they in order descending percentage were lesser use of electricity in homes (86.84%), Wrapping goods with old newspaper (84.21%), lesser drinking tea and coffee bags (84.21%), use of emptied coffee bottles for filling sugar (83.92%), use refill type of dishwashing liquid (83.33%), lesser carbonated drink (83.04%), fixing torn clothes for use (82.75%), lesser use of spray-type mosquito repellent (78.95%), lesser sugar intake (77.78%), repairing the defected fan for use (76.32%), wrapping goods with banana leaves (76.32%), defected chair being self-repaired (74.85%), using plant, vegetables, and fruit debris as plant, fertilizer (73.10%), sorting waste prior disposing (70.18%), use peanut shell to make fertilizer (61.99%), refusing use of foam for wrapping goods (61.70%), use of emptying bottle for drawing water (60.82%), use old plastic bag after its cleaning (60.23%), use refill-type coconut oil after it ran out (58.19%), use split banana leaves to make compost (56.43%), This our finding showed that majority of respondents gave full cooperation in solid waste management. This was coincident with that of Wetchamont (2007), who studied the community solid waste management with community participate in Nongsoong sub-district, Mukdahan province, and found that involvement community leaders in solid waste management resulted increase of respondents from moderate to high level.

CONCLUSION AND SUGGESTION

Process of solid waste management by community participation and its effects were studied with all facilitating and impeding conditions and factors of its process together treated. Data collection methods included those of relevant information from literature, field observation and information by interview and observation of participation. The data from activity setting, and quantitative data from questionnaire in solid waste management. Findings were (1) Seminar and training on waste reduction at its originating source gave overall achievement for 41.1% with level of the upper area very good, and percentage of utilization was 96. Whereas seminar on biologically fermenting products, percentage of achievement was 45.17, with 86.50% utilization; (2) determination of the amount/composition of solid waste in localities before and after seminar and training in the upper area was 2.352/2.202 kg per day with central area for 1.892/1.609 kg per day. And the lower area was 2.426/2.324 kg per day; (3) quantitative studies on knowledge and perception of waste showed to have a pronounced effect on the issue of hazardous and organic waste; (4) knowledge and perception regarding waste management indicated that effective and efficient solid waste management was by reducing waste from all originating sources, production of compost using organic waste material, and new product making; (5) opinions on reduction of the solid waste volume showed that respondents very strongly agreed with community having their part in helping the solid waste volume reduction, and waste sorting being done from family; (6) participation in solid waste management of the public showed that reduction of electricity consumption in the home, wrapping goods using newspaper, lessening tea and coffee drink, refilling various liquids in original containers.

REFERENCES

- Department of Environmental Quality.(2003.) *Knowledge on the Environment*. Bangkok: Unit of Promotion and Dissemination of Knowledge.
- Department of Policy and Plan for Natural Resource and Environment. (2006.) *Meeting Report on World Biodiversity Day, Biodiversity of Forest*. Bangkok: Natural Resources and Environmental Policy and Planning Office.
- Noppavan, C. *et. al.* (2007.)*Study of Perception, Consciousness, and Troubleshooting of Garbage from Kohchai Community, Pratoochai, Patong CommunityPhuket*.
- Saman, A. (2003.)*Participation of Communities in the Solid Waste Troubleshooting: Case Study of Sri Samran, Wanghin District, Srisaketprovince.,KornKaen University*.
- Sunee, M. & N. Kanchanawanit. (2000.) *Research Report: Participation of Citizens in Municipal Solid Waste Management*. Bangkok: Center for Law and Environmental Development. Faculty of Law, Chulalongkorn University.
- Sunee, M. (1997.)*Effective Solid Waste Management: Socio-Economical Patterns and Standards, Management and Law for Solution of Community Issues. Environmental Research State*. 22(1): 5-51.
- Suphakhawadee, T. (2002.)*Community Participation in Solid Waste Management of Sub-District Administration of Banped, KornKaen Province., KhonKaen University*.
- Wetchamont, S. (2007.)*Solid Waste Management by Community Participation in the Sub-District Administration of District Nongsong.Mukdahan Province.Maharakham*.

