

# **Waste Management in the Community: A Case Study of Maesook Municipality, Chae Hom District, Lampang Province, Thailand**

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## **Abstract**

This article is part of a research project on the extension of results for waste management by modeling community: a case study of Maesook Municipality, Chae Hom District, Lampang Province. The objectives of this study were to study the community waste management model and the factors affecting the success of the waste management of Maesook Municipality. It was qualitative research. The data were collected from the key informants, including those involved in waste management of Maesook Municipality and the people living in Moo 1, Ban Maesook which was a village model of waste management of Maesook Municipality. A total of 20 key informants were selected by a purposive sampling method. The data were collected from documents, non-participant observation, semi-structured interview and focus group discussion. Content analysis was employed to analyze the data. It was found that the waste management model of Maesook Municipality was a collaborative operation with educational institutions using the research process as the guidelines for the operation. The operation focused on systematic operation with a clear operational framework, including objectives, research management process, creating community collaborative to create output, outcome, and policy recommendations for the development of effective waste management in the community. This type of operation resulted in effective the waste management of Maesook Municipality. The factors affecting the success of waste management of Maesook Municipality included the government regulations and enforcement that decentralized to local authorities and the regulations consistent with the community context; the continuous development of waste management of the local government and the creation of new interesting ways for waste management; the participation in waste management requiring daily waste management behaviors contributing to reduction of waste as well as encouraging people to take care of the environment in the community and the bureaucratic process focusing on creating understanding and acceptance of the waste management policy so that the practitioners can efficiently provide public services to the community.

**Keywords:** Waste Management, Community, Maesook Municipality

## Introduction

Solid waste is an important issue both at community and national levels. It is the national agenda that all sectors in the country must focus on and solve this problem urgently. According to Pollution Control Department (2008), the term “waste” refers to waste paper, remnant of cloth, food scraps, material scraps, plastic bags, food containers, ash, animal waste, animal remains or anything removed from roads, markets or other places. It also includes infectious waste, toxic or hazardous waste from the community or household. According to the situation of solid waste in the past based on the report of Pollution Control Department (2017), the amount of waste increased. The amount of solid waste in the community was expected to increase every year. In 2015, the amount of solid waste was 26.85 million tons (73,560 tons / day). There was waste management by local government in 4,545 areas (59%). In addition, 15.49 million tons (58%) of waste were collected and disposed at the waste disposal sites. Only 8.34 million tons / year (31%) were eliminated correctly. The remaining of 13.59 million tons (50.61%) were left in the community and incorrectly disposed such as burning outdoors, disposing in old clay ponds or desolate areas. These usually happened, especially in small local government. Since 2014, only 4.94 million tons (18%) of solid waste have been reused. By mid-2016, it reduced to 6.22 million tons due to the government’s policy that waste management was declared as a national agenda.

According to the information mentioned above, the problem of waste is linked to the management of the local government. Also, one of the important causes of the waste problem comes from the community areas. One way to reduce the amount of waste is to solve the problem at the community level, such as reducing the amount of waste from its sources. According to Adisak Rojanaphong (2008), solving waste problem in the community should be done by reducing the amount of solid waste. The reduction of solid waste from the sources will reduce the amount of solid waste generated in each community. Consequently, effective waste management must be carried out locally through cooperation and continuous participation and the appropriate management should be developed to match with the context. Maesook Municipality, Chae Hom District, Lampang Province was the target area of this research project focusing on effective waste management. According to the context of waste management of Maesook Municipality, the starting point for operation was in the year 2015. It started in Moo 12, Ban Maesook Samakkee which was a pilot village for waste management. Even Maesook Municipality had undertaken the projects related to waste management, the expansion of community involvement in waste management was still needed. So, this led to the establishment of the research project on the extension of results for waste management by modeling community: a case study of Maesook Municipality, Chae Hom District, Lampang Province which contributed to the community’s efficiency in waste management. It started in Moo 1, Ban Maesook since this village was ready to participate in the project. From the results of the operation, people of Moo 1 Ban Maesook who joined the project gained knowledge and succeeded in waste management. However, the waste management in the community cannot be successful in only a short time. The operation must be continuous in order to be a good practice for people in the long run. In this paper, the research team focused on the important objectives, namely (1) to study the model of community waste management of Maesook Municipality providing the results of the study on waste management model and the analysis of the linkages of the various components, including objectives, research management process, output, outcome and recommendations; and (2) to study the factors affecting the success of waste management in Maesook Municipality which was the lesson learned for developing more effective waste management approaches.

The researchers, therefore, hope that this article can be part of the development of a participatory waste management model with the local government and local people which are

considered an important part in solving the problem of waste and leading to a sustainable and livable community.

## **Research Methodology**

The study of community waste management: a case study of Maesook Municipality, Chae Hom District, Lampang Province was qualitative research. The research methodology can be presented as follows.

### **Population and Key Informants**

The area of the study was Maesook Municipality. The population included the people living in the area of Maesook Municipality. The key informants were selected by purposive sampling method. They were divided into 2 groups: the staff involved in waste management of Maesook Municipality and the people living in Moo 1, Ban Maesook which was the village selected to participate in the project: the extension of results for waste management by modeling community: a case study of Maesook Municipality, Chae Hom District, Lampang Province. The key informants were selected by a purposive sampling method as follows.

1. Seven officers involved in waste management from Maesook Municipality.
2. Fifteen people sector leaders from Moo 1, Ban Maesook.

### **The Tool Used in Data Collection**

1. Documents: The research team reviewed the literature related to the waste management and the documents related to waste management in Maesook Municipality.
2. Non-participant observation.
3. Semi-structure interview: It was the broad interview focusing on the objectives of the study, including the waste management model of Maesook Municipality and the factors affecting the success of the waste management of Maesook Municipality.
4. Focus group discussion: The informants were divided into 2 groups: 11 people in each group. It provided an opportunity for the key informants to express their views through a variety of perspectives.

### **Data Analysis**

The researcher then relied on the qualitative research approach via documents, non-participant observation, semi-structured interview, and focus group discussion which were the main data collection tools. The data were analyzed by content analysis based on the concept of Patton (1990). The meaningful speeches were quoted as the source of the interpretation along the way of data analysis. In some aspects of the interpretation, it was the explanation of the in-depth belief of the researchers by focusing on the information obtained from the informants.

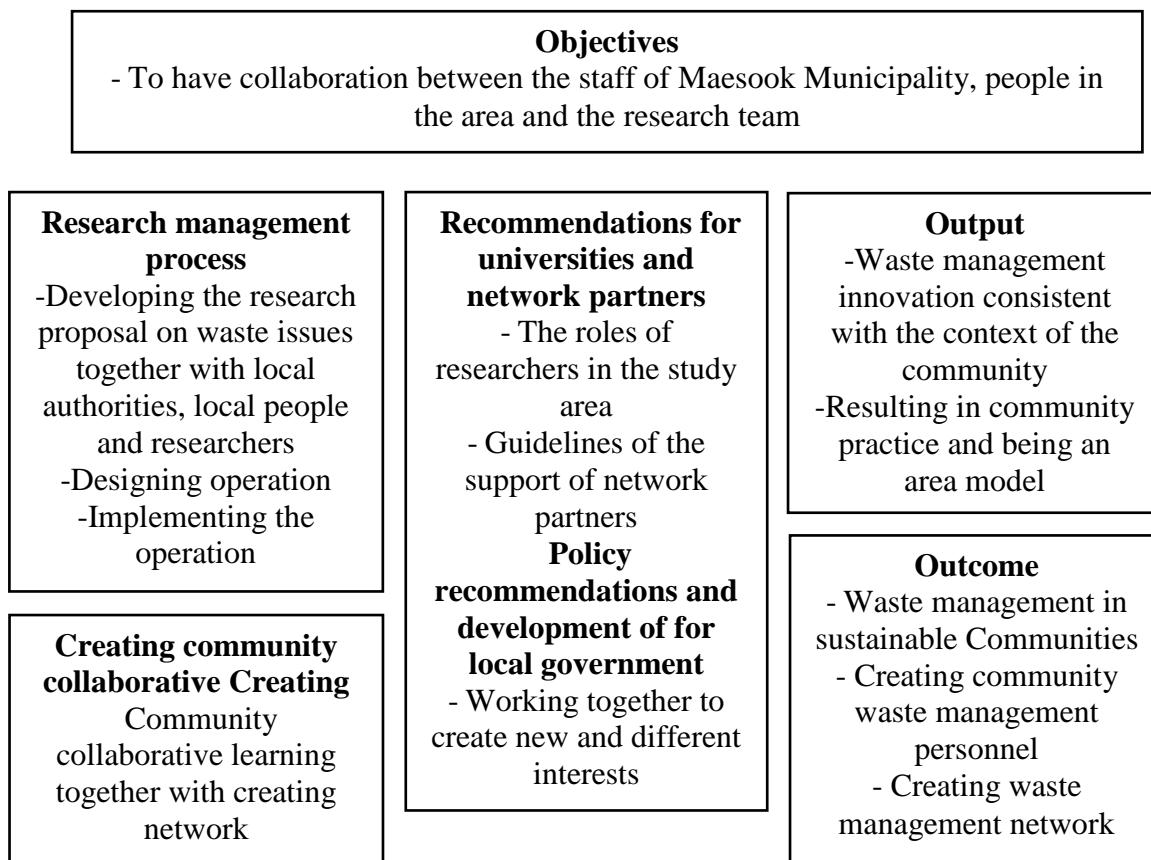
### **The Reliability Test of the Data**

This study was the qualitative study. The test of the reliability of the data was then regarded as the essential thing to be carried out in order to derive the accurate and clear data. The researchers used the analysis process with the reference of the meaningful quotes and the concept-mapping technique was also used to avoid the distortion of the data. Besides, the reliability of the data was also tested (Lincoln & Guba, 1985), in the following sections of the study: the multiple methods technique, audit and member check technique.

## **Community waste management model in Maesook Municipality**

This article was part of the results of a research project on the extension of results for waste management by modeling community: a case study of Maesook Municipality, Chae Hom District, Lampang Province which was conducted jointly between Maesook Municipality and the research team. The results of the study of the community waste management model of

Maesook Municipality were based on “Chatnapa Promma’s analysis”<sup>3</sup> which described objectives, research management process, researchers’ skills development process, output, outcome, and recommendations. The results of Community waste management model in Maesook Municipality can be explained as follows.



**Figure 1** A framework describing the results of a research study on the model of community waste management of Maesook Municipality.

The model of community waste management of Maesook Municipality, Chae Hom District, Lampang Province according to Scheme 1 can be described as follows.

### Objectives

The waste management model in the area of Maesook Municipality, Chae Hom District, Lampang Province started from setting the goal to solve community waste problem which focused on the study of the context of waste problem in the area. There was collaboration with educational institutions using the forum to exchange ideas. The study of the context of waste problem in the area revealed that the waste management in Maesook Municipality area started in 2015. There was the village model which was Moo 12, Ban Maesook Samakkee. At the beginning, the budget of Maesook Municipality was used. External agencies also supported this project by demonstrating and providing knowledge about waste management, waste separation and organic waste management. However, waste management in Maesook Municipality area must be more effective. The exchange of learning between the staff of in Maesook Municipality area and the people in the area was also needed. The researchers from

<sup>3</sup> Chatnapa Promma’s analysis from the paper discussing about the synthesis of research under the framework of the research community development of the livable local community of Rajabhat University. The research team used this framework as a guideline for describing the waste management model of Maesook Municipality

the educational institutions also agreed that the expansion of community involvement in waste management should be done. The village located at Moo 1, Ban Maesook was selected as it was ready for the development as the staff of Maesook Municipality stated as follows.

*“The establishment of the objective began with a survey of the area to know the context of the area. This concept was from a research project that provided a forum for sharing ideas. The purpose of waste management in the area was from the exchange of ideas and learning of the people in the area, the staff of Maesook Municipality and the research team.”*

In summary, the objective step was to set a common goal through analytical processes using the area-based approach to achieve the goal consistent with the real problem of the area and leading to effective solutions to the waste problem of the community.

### **Research management process**

Since the waste management model of Maesook Municipality, Chae Hom District, Lampang Province was a research process, one important step was research management process. Maesook Municipality developed the research proposal and created a clearer working process which was consistent with waste problem in the area. Research management process consisted of 3 important stages as follows.

Stage 1: Developing the research proposal on waste issues together with local authorities, local people and the researchers: Since the pattern of waste management of Maesook Municipality was the research development, the research issues were important in the early stages requiring the cooperation of local authorities, local people and the researchers. For the case study of waste management in Maesook Municipality, the representatives of those involved in waste management in the area, including Maesook Municipality and people in the area shared ideas and developed research proposal in order to obtain the research proposal consistent with the needs of the community and Maesook Municipality.

Stage 2: Designing operation: Once the research proposal was developed to meet the needs of the community, the next step was to work together. The analysis of the context of Maesook Municipality revealed that the waste problem in Maesook Municipality was caused by waste from daily life such as plastic bags and water bottles because there were shops in the community area. Therefore, the operation of waste management was organized by providing waste management training in daily life to reduce and reuse waste as well as sell it for generating income. The training was provided by experienced speakers living outside the area to help create new working experiences.

Stage 3: Implementing operation: It was the coordination and the implementation of the operation together to operate waste management in the community.

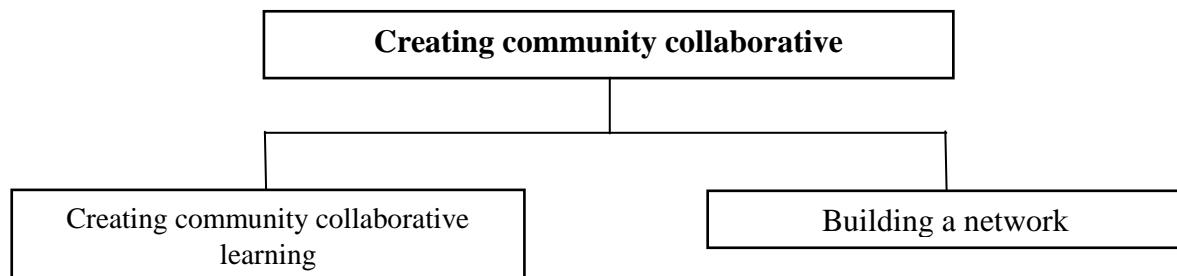
*“Research management process is a critical process. The key is to work together. This is a great result because each of the people involved has their own network, so there is a diversity of working approaches.”*

### **Creating community collaborative**

In addition to the research proposal development process based on the research management process, one of the important things to do along the way was the researchers' skills development. The operation of waste management of Maesook Municipality, Chae Hom District, Lampang Province created community collaborative learning. There were the learners and the actors in the area using the exchange knowledge method as well as building a network in the community. This can be evident from the information from the interviews presented below.

*“Our organization is committed to learning more skills to manage our own area in order to have sustainable waste management.”*

*“We try to build a network together. Working with relevant agencies allows us to see a wider range of solutions. It is better than working on our own. Working on our own resulted in both success and failure.”*



**Figure 2** Creating community collaborative

### Output

Evaluation of the operation was an important part. From the operation, it was found that 50 participants in the waste management project from Moo 1, Ban Maesook had more effective waste management. They also had knowledge and understood about the waste management and were ready to convey the knowledge to other areas. Table 1 was the information from the research on “The extension of results for waste management by modeling community: a case study of Maesook Municipality, Chae Hom District, Lampang Province”

**Table 1** Waste management at individual level: a case study of Maesook Municipality, Chae Hom District, Lampang Province

Waste management issues	Individual waste management level(rating scale: 5 levels)	
	Before participating in the project	After participating in the project
I always put all the food left in the food waste bin.	2.94	4.14
I often separate waste for using and selling to earn income.	2.50	3.96
My neighbors and I helped to promote waste separation.	2.34	3.44
I always warn those who do not throw waste in the bin.	2.36	3.52

Another output was that when the research project was implemented, there was shared learning and the model of waste management can be constructed based on the study mentioned above to be a guideline for education and implementation of other areas.

### Outcome

The outcome was derived from the waste management process of Maesook Municipality, which was a sustainable waste management approach. People in the community, local authorities and the researchers shared the knowledge that resulted in the creation of community waste management personnel for waste management network. The information from the interviews was presented below.

*“What we have got is not only the reduction of waste, but as the practitioners who directly relate to this matter, we have also shared and exchanged knowledge with others and known more people. We know the lecturers who have operated the project together. We corporately find solutions together.”*

### Recommendations for universities and network partners

First, the roles of the researchers in the study area: The results of this research showed that waste management of Maesook Municipality was implemented in the area by the cooperation

of all local people and the research team. Therefore, the roles of the researchers in the study area included being supports and encouraging collaboration focusing on the participation of the staff and people in the community in order to learn and have sustainable solutions.

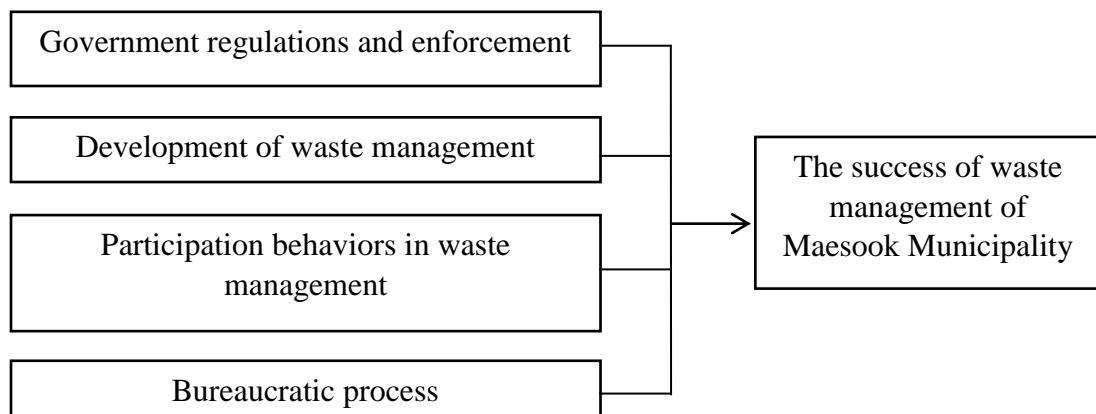
Second, the network partner's advocacy approach: It should support the appropriate "input" to meet the needs of the community, including experts, materials, equipment and coordination that can help make the waste management of the area more efficient. According to the case study of Maesook Municipality, there was a lot of waste from everyday use. The way to solve this problem was to reduce the amount of waste and sell it. Therefore, Maesook Municipality coordinated with private agencies to buy plastic bags in the community.

#### **Policy recommendations and development of guidelines for local government**

Working together to create new and different interests should be done because the problem of waste has been solved for a long time. Participation of other sectors, including educational institutions or networks has resulted in new and different ways of managing waste in the area. It creates more interest for the community. As a result, Maesook Municipality should apply this approach to encourage continuous waste management in the community and cooperate with other sectors to expand the network of waste management to spread more widely.

#### **The factors affecting the success of waste management of Maesook Municipality Chae Hom District, Lampang Province**

Based on the study, the results can be presented as follows.



**Figure 3** The factors affecting the success of waste management of Maesook Municipality Chae Hom District, Lampang Province

#### **Government regulations and enforcement**

This factor affected the policy implementation. Waste problem is a national agenda, but all central, regional and local agencies involved in this issue cannot be linked together in using proper policy regulations. From the case study of waste management model of Maesook Municipality Chae Hom District, Lampang Province, it was found that the implemented regulations that had contributed to the success of the waste management in the area were from a common agreement at the community level. Therefore, appropriate government regulations and enforcement affecting effective waste management in the community is to decentralize the power to the local organizations to issue the regulations and enforce them according to the suitability of the context of the area such as having village meeting and Village Statute. The enforcement of the regulations should be based on public participation in the area. The central and the regional government agencies should be responsible for supporting the missions of the local authorities. The information from the focus group discussion was presented below.

*“Using only the conscious mind of people in the community cannot solve waste problem. Local agreements are needed. We regularly have meetings with the representatives of each village in order to develop the regulations from the existing government regulations.”*

*“Working on solving waste problem is not the same everywhere. The point is we need to have power and fund to solve the problem in our own area.”*

### **Development of waste management**

This factor was related to the work of the local administration which was Maesook Municipality as it was responsible for solving the waste problem in the area. To achieve the development of solid waste management, waste management must be developed. Maesook Municipality also focused on such issues. The projects about waste problem have been continuously organized. New approaches were always used to motivate people to manage household waste such as proactive public relations, having speakers to educate the new ways of waste management which were not the same as the existing projects, monitoring by the garbage collectors and reporting the garbage disposition of people in the community as well as focusing on the participation of the community in the meeting to find solutions to the problem together. To achieve successful waste management, the operation must always be developed for continuity in working and creation of new things for people in the community.

### **Participation behaviors in waste management**

This was a very important factor. Participation behaviors in waste management referred to the daily behaviors of people in the community, which reduced the amount of waste, including proper disposal of waste that did not affect the environment. Another important issue was the involvement of people in the community helping to warn those having inappropriate behaviors causing waste problem. Maesook Municipality, Chae Hom District, Lampang Province motivated the reduction of waste used in the consumption and monitoring each other in the community. For example, if people in the community dumped garbage incorrectly, the garbage collectors would recommend appropriate approaches. Such operations were important for building public consciousness in the community as the information from the interview stated as follows.

*“Waste management is not just our own responsibility, but we can help if our neighbors do not know how to deal with it. If we continue doing this, the community will have a common sense in waste management.”*

### **Bureaucratic process**

This was the factor related to policy implementation. That is, local government had an important role to play in public service delivery. Successful practitioners must understand and accept the policy in order to work effectively. The leaders in the organization must also create clarity and commit to solving problems. These issues were important things making people work with intention which affected the quality of work. For the waste management of Maesook Municipality, the waste management team thought that waste management was a national priority. Therefore, clarity and understanding of the policy was important to be consistent in order to achieve a defined goal.

## **Conclusions**

The waste management model of Maesook Municipality, Chae Hom District, Lampang Province worked together with various agencies. Maesook Municipality was the main responsibility organization in the area together with the research team from educational institutions. The research process was an important part in the operational process which started from setting up of the objectives to the measurement and evaluation of the output, the outcome and the proposed solutions. Using this model allowed Maesook Municipality to have waste community innovation used to solve waste problem in the community. There was also the creation of community personnel to be good waste management practitioners leading

the sustainable management of problems in the area. Creating waste management networks with other agencies were also operated. This created a channel to have collaborative operation for developing solutions to the problems in the area.

The factors that affected the success of waste management in Maesook Municipality, Chae Hom District, Lampang Province were as follows. First, it was government regulations and enforcement which local administrative organizations had the authority to operate the operation suitable for their areas. Second, it was the development of waste management. The development of waste management will be successful if it is improved even better such as having continuous problem solutions and creating new forms of waste management for the community. Next, it was participation behaviors in waste management which were daily behaviors of people in the community to reduce the amount of waste and monitor and control each other on waste management in the community. Finally, it was bureaucratic process that practitioners must understand and accept waste management policy in order to perform operation clearly and effectively.

## **Discussions**

The waste management model of Maesook Municipality, Chae Hom District, Lampang Province was the collaboration of various organizations. Maesook Municipality was a main responsible organization in the area together with the research team from educational institutes. The research process was an important part in the operational process which consisted of various steps, including setting objectives, research management process, creating community collaborative to produce output, outcome and policy recommendations. This model was consistent with the public policy theory of “Bill Jenkins’s policy process” (Hill, 2013), using the system theory which consists of the input related to the demand of people. The political is a decision area and leads to the output and the outcome under the appropriate environment and context of the area. In this regard, the research team found that the waste management model of Maesook Municipality was a good operation because it was the operation of the local government and people. So, it was the operation based on the policy. The process that was consistent with the public policy theory would be effective.

The results of the study pointed out that the success of the waste management model of Maesook Municipality was derived from the participation of the people in the area. This reflected the public administration principle based on the concept of New Public Service. Prakorn Siriprakob (2016) stated that New Public Service associated with the concept of democratic citizenship must be involved in the process of public policy and the creation of a people-centered public sector. When considering the findings of the study, it was found that participation of the people in waste management was an important part of the success of the project. People were co-operating with relevant agencies with support from other sectors. Therefore, the policy guidelines for waste management should decentralize the power to the local organizations to issue the regulations and enforce them to address their own problems and the focus of public administration should be on “New Public Service”.

When considering the waste management model of Maesook Municipality, Chae Hom District, Lampang Province together with the 20-Year Pollution Management Strategy and Pollution Management Plan of the Department of Pollution Control (B.E. 2560-2564), there was consistency in the emphasis on using research process, community participation in problem solving as the information from Pollution Control Department (2017) mentioned that the implementation by public participation developed potential and strengthened the sector and research and development to support pollution management. However, the research team thought that this strategy should support the local government to operate independently in order to solve the problem of waste in their own area sustainably. In addition, when considering the working process of the waste management model of Maesook Municipality,

it was consistent with the relevant research on the focus on participation and systematic improvement. It was also consistent with the study Veerayouth Duangchana (2009) studying the guidelines for development of people's participation in garbage management: a case study of Phothong Sub-district Municipality, Phothong District, Angthong Province. It was found that there was a garbage management model from participation with the practitioners and the guidelines were developed and implemented by the community. It was a strategy with systematic indicators.

The results of this study revealed that the factors affecting the success of waste management of Maesook Municipality, Chae Hom District, Lampang Province included governmental regulations and enforcement that were implemented by the local government based on the suitability of the area. It was the development approach consistent with the concept of local government as Tanet Charoenmuang (2010) mentioned about the essence of local governance in terms of local people that local government have the freedom to make decisions and manage their own localities, such as having policy autonomy and bureaucratic process. This is consistent with the policy implementation of Voradej Chandarasorn (2009) in terms of the bureaucratic process that the implementation of successful policy implementation is the implementation of new policies. So, it depends on the level of understanding and the level of empowerment of the government officials at the operational level. According to the related research, it was found that the factors affecting the success of waste management of Maesook Municipality were in accordance with the research of Yuwat Wuttimete & Suprawan Piromthong (2015) on solid waste management in the communities of Ayutthaya city municipality, especially the governmental regulations and enforcement that the policy implementation must be consistent with central, regional and local administration. The focus should be on the authorization of the local government in order to develop and solve problems and respond to the needs of people in the area effectively.

Apart from the structural factors such as governmental regulations and enforcement and bureaucratic process that were the factors affecting the success of waste management of Maesook Municipality, Chae Hom District, Lampang Province, personal factors such as participation behaviors in waste management also contributed to the success of waste management. This was consistent with the study of Isarapong Pangsranoi (2014) on people's participation toward river management in Phranakhon Si Ayutthaya which had a moderate level of participation. Factors that influenced the people's participation in river management in Phranakhon Si Ayutthaya, Phranakhon Si Ayutthaya were age, education, income, occupation and duration of residence. The result of this study was the consideration of personal factors affecting participation in environmental management in the area. When analyzed together with this research, it would be beneficial to Maesook Municipality or the related agencies to manage the waste for policy implementation.

## **Recommendations**

1. Based on the results of the waste management model of Maesook Municipality, it was found that the collaboration of the various sectors resulted in successful waste management. Therefore, the waste management approach should be collaborative to make a difference and a new model in the area. It should also continue to operate in order to encourage people to be active in waste management.
2. The study results showed that the factors affecting the success of waste management are the government regulations and enforcement, focusing on the issuance of local regulations. Therefore, for the policy approach to operate waste management, the local origination should be authorized to deal with this issue. The community forum should also be promoted in order to understand and accept the collective agreement in the community. This will lead to sustainable waste management in the community.

3. Although the study focused on the issues of public participation in waste management for success, the waste management must be related to public administration in policy. Therefore, the approach for policy implementation should focus on the hybrid theory that the policy-making must come from the practitioners that understand the people and the area and the government administrators in order to make bureaucratic process consistent and clear, leading to effective practice as stated in the research results.

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