# A Study on Decentralized Waste Management Practices of Households in Trivandrum.

**An internship study as part of coursework of MSW by**

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## 1. Introduction

THiruvananthapuram Municipal Corporation came into existence in 3-10-1940. As per 2011 census population of Trivandrum is 957730. As a highly populated area were population density is 4457 SqKm, it is a difficult task to manage the waste in a centralized system. Trivandrum Corporation introduced decentralized waste management system where waste is managed at the source.

This study is conducted to analyze the changes in the attitude of the households when they shifted to decentralized waste management practices from the centralized waste management system. The study conducted in 43 households situated in different places of Trivandrum namely Shasthamangalam, Chacka, Manacaud, Vanjiyoor, and Thycadu.

## 2. Acknowledgment

This study is conducted by Mr. Tom Joy from Marian college Kuttikkanam as part of his fieldwork in Thanal, Trivandrum. Mr Tom Joy conducted this study under the guidelines of Mr Shibu K Nair, Program Director and Mr V Nikhilesh Paliath, Program Coordinator for Zero Waste & Climate Action Program at Thanal. We thank all the persons who cooperated with this study.

## 3. Objectives

- To understand the behavioral changes in households when they shifted to the decentralized waste management system.
- Identify the problems related to the different decentralized waste management practices.

## 4. Methodology

In Thiruvananthapuram Municipal Corporation, there are 100 wards and 2.4 lakh houses. Among 100 wards in the city, the study was conducted in Shasthamangalam, Chackai, Manacaud, Vanjiyoor and Thycaud wards and data was collected from 43 houses. In Manacaud ward 30 houses were visited and data was collected from 1 house that practiced decentralized waste management. 80 houses were visited in Shasthamangalam and data was collected from 21 houses that practice decentralized waste management. 55 houses were visited in Chaka and data was collected from 11 houses that practice decentralized waste management. 11 households were visited in Vanjiyoor and data was collected from 5 houses that use decentralized waste management system. In Thycaud data was collected from 5 households that use decentralized waste management system out of 20 houses visited. The study was conducted in those wards were decentralized waste management methods are popular. Out of 200 households visited during the study, only 43 households practice decentralized waste management.

Tool used: Questionnaire used for collecting data from the households.

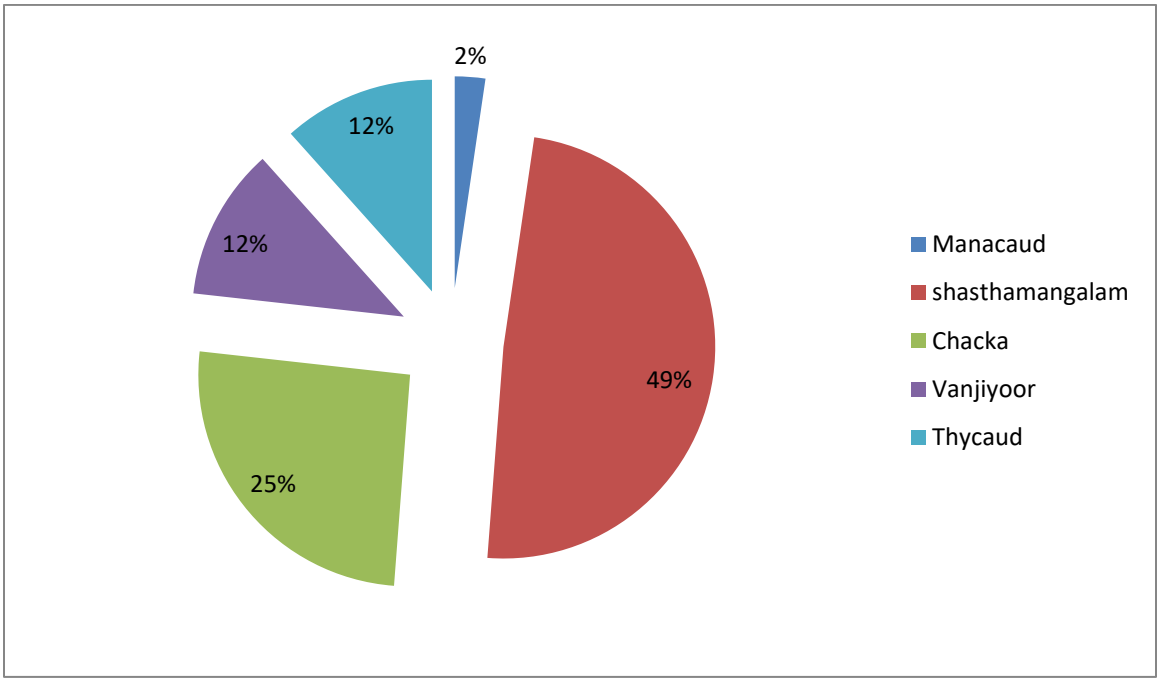


Figure 1: The graph shows the percentage of data collected from each ward.

## 5. Findings

### A. Waste management equipment used by households

Among samples collected from 5 wards in Thiruvananthapuram Corporation, 55% of households are using kitchen bin, 32% of households are practicing pipe compost. Only 13% of households are using biogas for waste management.

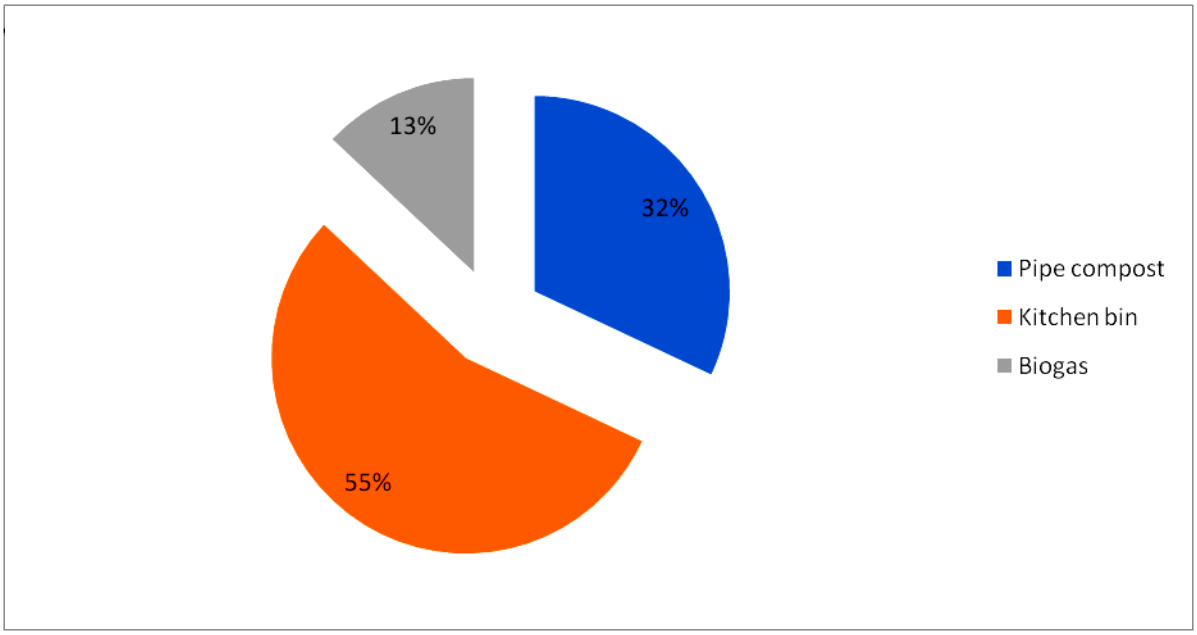


Figure 2: The figure shows the proportion of equipment used by households for decentralized waste management among the sample surveyed.

## B. Percentage of households that supports decentralized waste management.

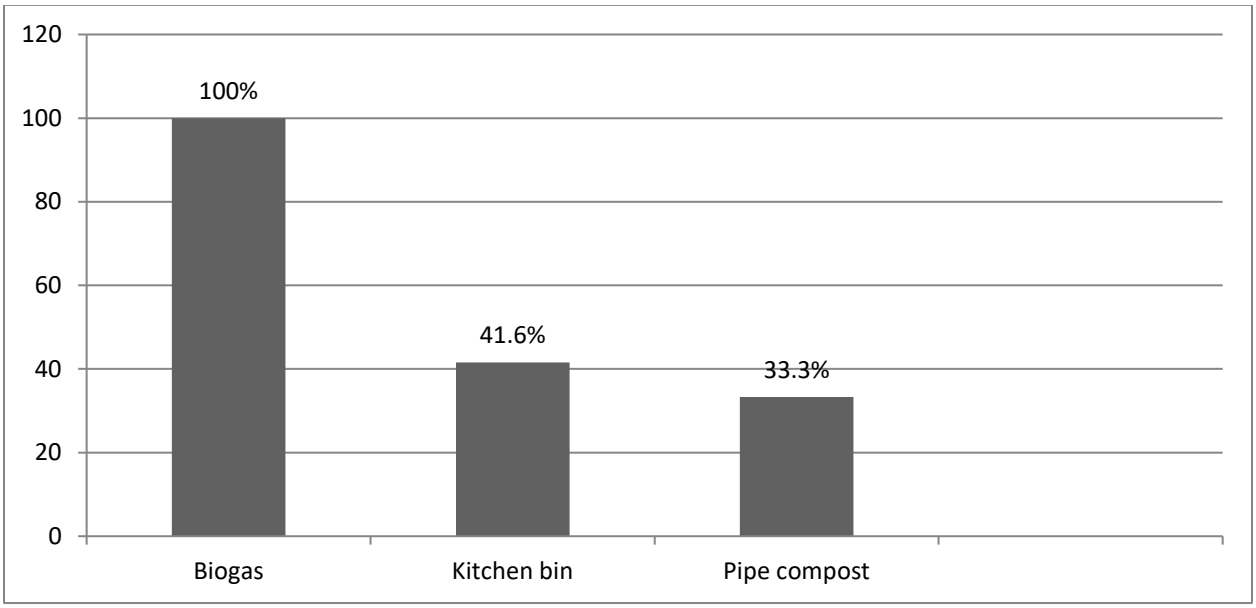


Figure3: The figure shows households that support decentralized waste management in the respective equipment category.

100% of families using biogas supporting decentralized supporting decentralized waste management practices. They are completely satisfied with the decentralized waste management system and are supporting this system. Only 41% of families using kitchen bin are supporting decentralized waste management system. 33% of families using pipe compost support decentralized waste management practices.

## C. Households managing their non-biodegradable wastes.

Among the collected samples, 95.5% of families manage their biodegradable wastes by giving it to the service providers. Once in a week service providers collects non-biodegradable wastes from the households. Only 4.5% of households in the study are burning their non-biodegradable wastes. It is a positive change among the households.

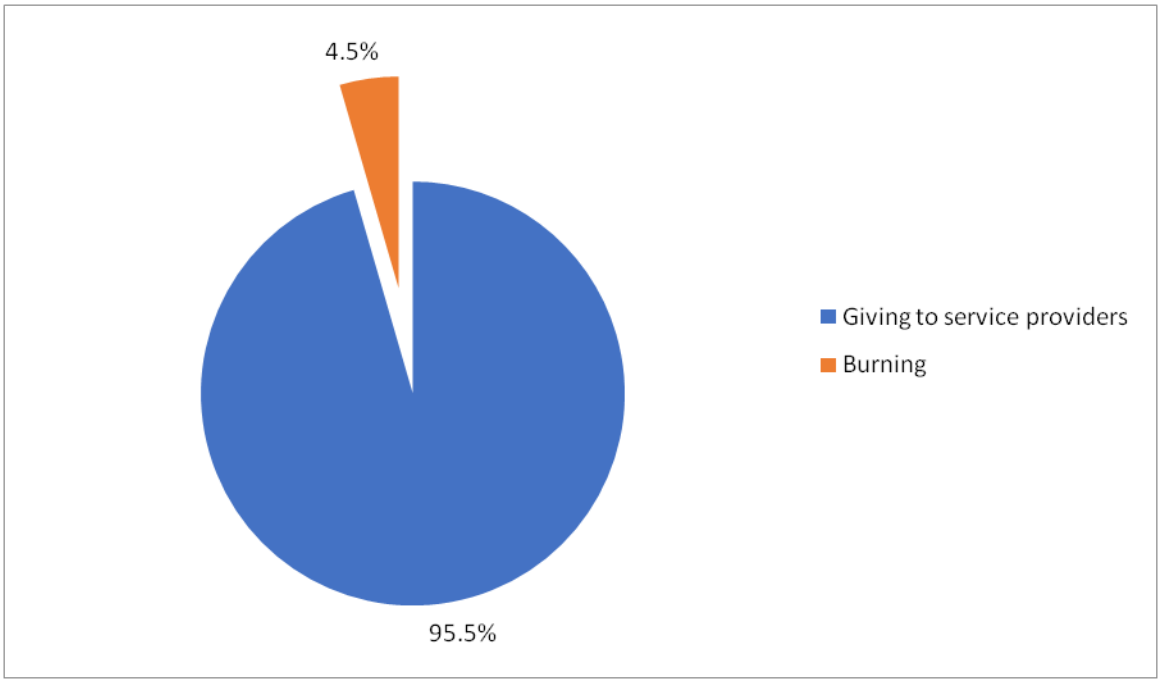


Figure 4: The figure shows the method of non-biodegradable waste management followed by households and their proportion.

## D. Participation in waste management activities.

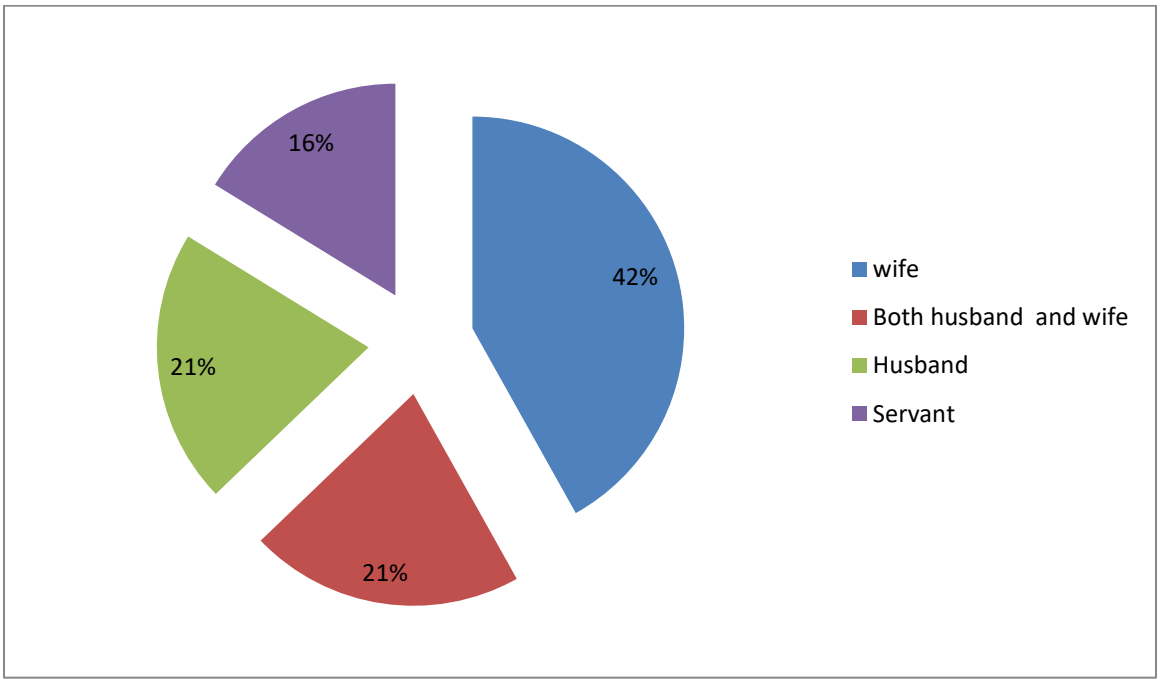


Figure 5: This graph presents the participation of different people in waste management activities in households.

In 18 houses women are managing wastes, 9 houses both husband and wife managing wastes, in 9 houses husband taking care of waste management and in 7 houses servants are managing wastes.

## 6. General findings

a. Among 43 families, 37 families have the garden in their house.
b. Only 8 people choose a decentralized waste management system for their own interest.
c. Among 43 households only 9 families suggested these waste management practices to other.
d. An average of 7 minutes spends by a family for managing their wastes in a day.

## 7. Problems faced by households

- Lack of follow-up from the part of concerned authorities.
- Disturbances from worms.
- Service providers are not coming at the correct time.
- Lack of space in the house.
- Other people are dumping wastes on the roadside.

## 8. Suggestions from households

- Need 3 pipes instead of 2 pipes for pipe compost.
- There should be a frequent visit by service providers.
- The decentralized waste management system should be made mandatory for everyone.
- There should be a punishment for people who dump their wastes.
- We should adopt foreign waste management models.

## 9. Observations

- Waste management systems of households are highly influenced by neighbors.
- Only 1 out of 5 houses are using decentralized waste management system.
- Most of the families have an opinion that pipe compost is a failure.
- People are dumping their wastes in roadside, river and open plots.
- Households with gardens have shown more interest to manage their wastes at source.
- There are people who do not know about decentralized waste management practices in wards popular for decentralized waste management.

- During the survey, it was observed that the streets were kept very clean where more households practice decentralized waste management.
- There are households who showed interests to join decentralized waste management practices.

## 10. Suggestion

- Awareness classes should be provided to households through residential associations because they have a good influence on households.
- Make sure that there is a proper follow-up. There should be a monitoring body.
- Make it compulsory to install any methods of decentralized waste management system in households.
- The punishments for those who dump their wastes in public areas should be made strict.
- A manual should be provided through each house which explains possible solutions to their waste management problems.
- Identify houses with limited facilities to install any of these systems and provide necessary intervention
- Biogas seems to be the most convenient and useful practice. Provide biogas at a subsidized rate.

## 11. Conclusion

Decentralized waste management practices implemented in the households of Trivandrum Corporation were able to transfer the concept of managing wastes at source to the society. Many people are successfully practicing decentralized waste management methods in their households. There are houses where the facilities of decentralized waste management practices are yet to be received. The study found that residential associations play an active role in the waste management practices of the households in an area. It is clear that more people would follow these decentralized waste management practices if the service providers give proper follow-up. Disturbances from worms are the main problems faced by the households. Households using biogas seems to be more satisfied and they are suggesting these practices to others.

Some households have the misconceptions that decentralized waste management systems are not effective and it is the responsibility of the corporation to manage their wastes. We need to give more awareness and training classes to those people. More than 95% of households give their non-biodegradable wastes to service providers. This shows that very are few households that burn plastics and other non-biodegradable wastes among those who are part of the decentralized system. Another interesting finding of this study is that more men are joining with women in waste management in households. It is a positive change in the community. During the survey, it was observed that the streets were kept very clean where more households are practicing decentralized waste management systems. The study found households who show interest to practice decentralized waste management system but are yet to receive equipment. It would be more effective if we provide awareness classes including experience sharing by people who are successfully practicing these methods to those people who are not using decentralized waste management systems.