**Household-Scale Waste Management in Batu City**

**Aulia Istiqamah**

University of Merdeka Malang, Indonesia

Jl. Terusan Raya Dieng No. 62-64 Malang, 65146, Indonesia

*Corresponding Author: E-mail:* [*auliaistiqamah96@gmail.com*](file:///C:\Users\User\Downloads\auliaistiqamah96@gmail.com)

**Abstract**

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| The ever-increasing landfill has a negative impact on environmental health and socio-economics. The phenomenon that occurs in Batu City is that there is still a large volume of waste piling up causing various problems. The purpose of this study is to describe and analyze household-scale waste management in Batu City based onImplementation Mayor of Batu Regulation Number 67 of 2018 concerning Regional Policies and Strategies for the Management of Household Waste and Waste Similar to Household Waste. This study uses a descriptive method with a qualitative approach, which aims to obtain information about the current situation by looking at the relationship between existing variables. Data collection techniques include observation, interviews and documentation, then the data analysis techniques used are data reduction, data presentation and conclusion drawing. The results showed that Batu City has implemented waste management through (1) waste sorting by distinguishing organic and inorganic waste; (2) garbage collection every 2-3 times a week from source to TPS; (3) transporting waste using trucks once every 1-2 days to TPA Tlekung; (4) Waste processing by selling inorganic waste such as plastic, plastic bottles, cartons, and paper to be exchanged for money to collectors, or managing organic waste into compost and performing 3Rs; (5) Final processing is carried out at TPA Tlekung, namely waste that can no longer be used and has no economic value anymore.  **keywords :** Household waste, Implementation, Organic and inorganic |

1. **Introduction**

Along with the increasing pace of development in Batu City, the community's need for goods and services is also increasing. Therefore, the production of waste generated by the community will increase. For this reason, waste management efforts also need to be increased to balance the existing reality. The problem of waste, especially at the household scale, is no longer a new phenomenon in urban areas and is not a problem that can be underestimated, but waste has become a fairly complex problem that requires difficult handling.

The phenomenon that occurs in Stone Town is there is still a large volume of waste piling up because it is not transported optimally, thus spreading unpleasant odors. In addition, the community complained about delays in terms of waste transportation services carried out by the Environmental Service officials. The problems that arise in the waste management process in Batu City today are in the process of collecting waste. In this process, there is still a lot of garbage that is collected and not handled optimally.

Therefore, the river is considered one of the easy dumping places for people in Batu City. Garbage dumped into ditches or rivers will cause unpleasant odors and views. Population growth accompanied by high flow of urbanization to urban areas has led to an increasing volume of waste that must be managed every day. This becomes more difficult because of the limited land for the final disposal site (TPA). The transportation of waste to the TPA is also hampered due to the insufficient number of vehicles and the condition of the equipment that is no longer suitable for use.

The size of the pile of waste that is not handled will cause various problems, both directly and indirectly for residents. The direct impacts of less than optimal waste management include various infectious and skin diseases and respiratory disorders, while the indirect impacts include the danger of flooding caused by obstruction of the flow of water in the river because it is blocked by piles of garbage dumped into the river.

1. **Literature Review and Hypotheses**

Public policy consists of several stages, one of which is implementation. Nugroho (2014) states that policy implementation is essentially a method used so that a policy can run well or in other words can achieve success in accordance with predetermined goals, where according to Edward III's theory policy implementation is influenced by communication, resources, disposition and bureaucratic structure. There is also a waste management policy based on the Batu Mayor Regulation Number 67 of 2018 which includes: (1) Sorting; (2) Collection; (3) Transportation; (4) Processing; (5) Final processing.

Garbage is a general term that is often used to describe solid or liquid waste materials. So, it can also be interpreted that waste is the remains of food and goods for human needs that are not liked or used anymore.

According to Slamet (1996:152) waste is, "All forms that are not desired by the owner and are solid". Meanwhile, according to Daryanto (1995: 98) waste is, "All types of solid waste or waste originating from households, offices, lodging houses, restaurants, hotels, factories, industries, including debris or remnants of building materials and others. -others of the same kind".

1. **Methods**

This study uses a descriptive method with a qualitative approach, which aims to obtain information about the current situation by looking at the relationship between existing variables. Data collection techniques include observation, interviews and documentation, then the data analysis techniques used are data reduction, data presentation and drawing conclusions.

1. **Results**

Implementation of Household Waste Management Policies in Batu City, East Java The Mayor of Batu issued a policy in handling household waste which includes five mutually supportive aspects/components where one another interacts to achieve goals. The five aspects include:

**Sorting**

Segregation of household waste in Batu City which is sorted and differentiated into organic and inorganic waste. In Batu City itself, there is already an intensive segregation of household waste in several villages/kelurahan. The majority of residents who do the sorting are people who participate as members or customers of the waste bank. In addition to sorting at source, sorting is also done at TPST 3R. There are 3 3R TPSTs in Batu City, namely Dadaprejo TPST, Pandanrejo TPST, and Temas TPST. However, only 1 TPST is running optimally, namely the Dadaprejo TPST.

**Collection**

Garbage collection in Batu City is carried out at certain times every 2-3 times a week from the source to the TPS. The collection is carried out with various types of vehicles that differ in each service area. Some used a pick-up car with a capacity of 4000L, a garbage cart with a capacity of 1000L and Tossa with a capacity of 3000L.

Based on a primary survey with DLH Batu City, the garbage service still does not cover 3 sub-districts that can be served only 2 sub-districts, namely Batu District and Junrejo District, where 1 more sub-district, namely Bumiaji District, only a small part is served. This is due to the wide geographical location and different elevations so that this sub-district has special services, not to mention the number of TPS that have not been able to accommodate waste in the Village/Kelurahan before being taken to the TPA.

**Freight**

Transportation from 27 TPS in Batu City is transported by truck every 1-2 days to TPA Tlekung, both dump trucks and arm roll trucks. The pattern of waste transportation is carried out in various ways, namely:

1. Garbage transportation with a direct individual collection system (door to door) in Beji Village, and Tlekung Village
2. The transportation system with an arm roll truck with a capacity of 6m3 uses the HCS system with Type 2, usually used in container type TPS. There are 7 arm roll trucks in Batu City which are used every day to pick up waste from TPS to TPA.
3. The transportation system with a dump truck with a capacity of 8m3 uses a manual system, usually used in building type TPS. There are 7 dump trucks in Batu City which are used every day to pick up waste from TPS to TPA.

Batu City has many TPS and three TPSTs scattered throughout the Batu City area with waste generation reaching approximately 313.17 m3 per day which must be transported to the TPA.

**Processing**

In Batu City, waste processing can be done through the Waste Bank and 3R TPST. This waste processing can help reduce the volume of waste, such as waste banks by selling inorganic waste such as plastic, plastic bottles, cardboard, and paper to be exchanged for money to collectors, or managing organic waste into compost and doing 3Rs (Reduce, Reuse, Recycle) in TPST 3R.

In Batu City itself, there are 116 Waste Banks spread across all villages/kelurahan in Batu City. The processing of household waste in Batu City is different in each village/kelurahan. In general, the majority of waste banks in Batu City only process household waste by sorting inorganic waste such as plastic and paper after it is collected and weighed for sale to collectors. In addition, there is also a waste bank that accepts organic waste to be made into small-scale compost through an indie composter, and utilizes inorganic waste that can be recycled first so that it has more economic value before being sold to collectors.

Batu City has 3 Integrated Waste Management Sites (TPST), namely TPST Dadaprejo, Dadaprejo Village, Junrejo District, TPST Temas Village, Batu District, and TPST Pandanrejo Village, Bumiaji District. Of the three TPSTs, the Dadaprejo TPST is an active TPST in its implementation, however, different from the other two TPSTs, for the Pandanrejo TPST there is an obstacle that not 100% of waste is disposed of to the TPS because KSM is still weak in addition to being less active KSM in Pandanrejo Village is also not independent which is still dependent on on ADD for fleet maintenance and so on. Meanwhile, in Temas Village, the 3R TPST has changed its function, being loaned to a lapak entrepreneur which later became a profit business which eliminated the initial role and function of the 3R TPST in the village.

**Final Processing**

The final processing of waste is carried out at the Tlekung TPA in Junrejo District. Waste that passes through this stage is waste that can no longer be used and has no economic value anymore. The result of the final processing at TPA Tlekung is in the form of gas and the second result is compost which is processed from dry waste (dry leaves, dry plants) which takes up to 3-4 weeks to turn into compost.

1. **Discussion**

**Factors Affecting Household-Scale Waste Management Policy**

**Communication**

In Public Policy Implementation Good communication is realized when the decision maker understands what he is doing. Understanding of what to do will only work when communication goes well. The Environment Agency as the leading sector responsible for the waste management process carries out various activities to invite the community to take part in protecting the environment and not to throw garbage carelessly, the communication is carried out in various ways including through socialization, community service, and cleaning activities every big day such as Environment Day, Batu City Birthday, and so on.

**Resource**

Resources also have an important role in policy implementation. The arrangement of resources in the implementation of waste management policies in Batu City is focused on the p . sectionwaste management responsible for all needs and affairs related to waste management in Batu City.

The limited quantity of implentators, which only consist of 1 section head and 2 staff, has resulted in the division of tasks between the number of officers and the volume of work that cannot be said to be proportional.

The limited number of TPS also results in the inability to accommodate waste in the Village/Kelurahan before it is taken to the TPA so that this hampers the implementation of waste management policies.

**Disposition**

The attitude of policy implementers is one of the important factors that determine the success of policy implementation. the implementers of waste management policies are committed to implementing this policy, this can be seen from the involvement of all elements in handling waste management starting from the Mayor to the RT level.

Waste management is a shared responsibility, both the government as the manager and the community as the source. Sharing roles in this responsibility also requires commitment, where the government must be committed to budgeting and facilitating according to applicable standards, while the community is committed to reducing personal waste and taking care of the facilities that have been provided.

**Bureaucratic Structure**

The bureaucratic structure also has an important role in implementing policy implementation. Policy requires cooperation from various parties because if the organizational structure is not conducive it will hamper the course of the policy.

The bureaucratic structure of waste management in Batu City has a basic pattern of relatively permanent organizational structure. However, there are developments, the complexity of the task, the lack of personnel with the status of civil servants, as well as field officers who are contract workers who can be suddenly dismissed at any time.

1. **Conclusion and Suggestions**

The Environment Agency as the leading sector has made various efforts through socialization and community service to invite the community to participate in protecting the environment. However, the implementation of household-scale waste management policies in Batu City has not run optimally, this can be seen from the number of active TPSTs, where out of 3 (three) TPSTs there is only 1 (one) TPST that runs optimally, this causes the accumulation of waste in the village/village.

In the process of waste collection services, it has not been able to cover services in 3 sub-districts because of its wide geographical location plus the number of TPS that have not been able to accommodate waste in the Village/Kelurahan before being taken to the TPA.

However, household-scale waste management in waste processing is quite active, waste banks in Batu City can recycle inorganic waste into items that are worth buying and can make compost with inorganic waste.

**Suggestions**

1. Waste Bank Optimization

Waste processing through the Waste Bank can help reduce the volume of waste in Batu City by selling inorganic waste such as plastic, plastic bottles, cardboard, and paper to be converted into money. In Batu City itself, there are 116 Garbage Banks spread across all villages/kelurahan in Batu City. The magnitude above is a potential that needs to be developed. Based on the Batu City Government Program, there is a Waste Mandiri RW program that requires a minimum of 1 Waste Bank in each RW in Batu City. Therefore, Waste Bank Optimization needs to be integrated with the program through the addition of waste banks according to the number of RWs in Batu City.

1. Addition of TPST

Reduction of waste at the source of waste in Batu City is still not optimal. Based on secondary data obtained in Batu City, there are 3 Integrated Waste Processing Sites (TPST) but only 1 TPST is still operating. Based on Batu City government policy, there is a mandatory 1 TPST program in one village/kelurahan. This is necessary because 1 TPST can reduce waste by 1,200 kg/day. Therefore it is necessary to add TPST.

1. Addition of Garbage Service Area

The addition of waste service areas is intended to improve waste management services in waste transportation so that the entire area, including areas that are still burning, landfilling and dumping into rivers, can be served properly. Areas that still carry out waste burning, landfilling and disposal into rivers are areas that are still not served by garbage officers because garbage officers still cannot reach these areas.

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