

Study of Household Scale Waste Management in Batu City, Indonesia

(Implementation of Batu Mayor's Regulation on Household Waste Management Policy)

Aulia Istiqamah¹, Tauchid Noor², and Praptining Sukowati³

¹⁻³University of Merdeka Malang

Indonesia

ABSTRACT

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 trash has become a fairly complex problem that requires difficult handling. This is due to the breakneck pace of development, which will significantly affect the condition of environmental cleanliness. When viewed from a health point of view, waste management efforts are significant because cleanliness is one of the elements necessary for the maintenance and improvement of public health status, which ultimately affects the community's quality of life. The purpose of this study is to describe and analyze the implementation of household-scale waste management policies concerning Regional Policies and Strategies for the Management of Household Waste and Household Waste Similar to Household Waste carried out by the Batu City Environmental Service; To describe and analyze the driving and inhibiting factors for the implementation of household-scale waste management policies carried out by the Batu City Environmental Service. The research method was carried out in observation, interviews, and informal conversations, all of which were sources of qualitative data. The most commonly used data sources are observations, discussions, and documents, sometimes used together individually. The results show that the Batu City Government supports the implementation of household-scale waste management by issuing regulations in mayoral instructions and participating in every household-scale waste management activity. In addition, there is a Standard Operating Procedure in household waste management.

Key Words: Household Scale Waste, Waste Management.

1. INTRODUCTION

Along with the pace of development in Batu City, which is growing, 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 trash has become a fairly complex problem that requires difficult handling. This is due to the breakneck pace of development, which will significantly affect the condition of environmental cleanliness.

When viewed from a health point of view, waste management efforts are significant because cleanliness is one of the elements necessary for the maintenance and improvement of public health status, which ultimately affects the community's quality of life.

Waste management is intended to improve environmental health and public health, protect natural resources, especially water, from pollution, and support the development of strategic sectors, such as the tourism sector.

Waste management in many areas has not been handled correctly, not only in urban areas but also in rural areas. One of them is due to people who are less concerned with environmental cleanliness and carry out waste management by applying individual patterns, namely by storing waste individually by burning, burying, and or throwing it into waterways or rivers. The unavailability of infrastructure facilities for garbage disposal triggers people in rural areas to dispose of garbage indiscriminately and stockpile or burn waste.

The phenomenon that occurred in Batu City that there was river pollution by microplastics of the microfiber type from the fibers of baby diapers, this was based on data from the environmental news site Mongabay.co.id on September 26, 2020, which stated that "Researchers from the Environmental Green Society found quality The Brantas River in Bumiaji, Batu City is bad where the condition of the water was found to be contaminated with ten microplastics per 100 liters of water". Based on this data, the researcher confirmed via telephone with the Chair of the Batu City Waste Bank on September 27, 2020, regarding environmental pollution by baby diaper waste and stated that Baby Diaper Waste Management is still not by the expectations of the local community who want waste transportation services to run effectively and efficiently.

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 collected and not handled optimally. Therefore, the river is considered an easy dumping ground for the community, especially the people in Batu City today. Garbage dumped into ditches or rivers will cause unpleasant odors and views. Population growth accompanied by a high flow of urbanization to urban areas has led to an increasing volume of waste that must be managed daily. This becomes more difficult because of the limited land for the final disposal site. The transportation of trash to the is also hampered due to the insufficient number of vehicles and the condition of the equipment that is no longer suitable for use.

Through this research, it can be discussed about waste management in realizing environmental cleanliness in Batu City. For that problem, identification can be formulated as follows: How is the implementation of household-scale waste management policies in Batu City, what factors encourage and hinder the performance of household-scale waste management policies in Batu City. The objectives of this research are as follows:

To describe and analyze the implementation of household-scale waste management policies based on the Batu Mayor Regulation ^[1] concerning Regional Policies and Strategies for the Management of Household Waste and Household Waste Similar to Household Waste carried out by the Batu City Environment Service; To describe and analyze the driving and inhibiting factors for implementing household-scale waste management policies carried out by the Batu City Environmental Service.

In general, the usefulness of this research can be grouped into 2 parts as follows; the theoretical use in this research is to contribute theory and practice to science, especially government science, to improve household-scale waste management in realizing environmental cleanliness in Batu City. It is hoped that it will be helpful for further research to create a clean, authoritative, and professional state apparatus.

The practical uses to be achieved in this research are to assist the development of science, especially the science of government on the environment, as well as an input for further study; As input for the Batu City government to create a clean, incredible, beautiful, comfortable, safe and friendly Batu City; As a training vehicle for researchers in understanding field conditions, understanding problems that arise and gaining skills in solving these problems.

2. LITERATURE REVIEW

Implementing policies and how a procedure works. Some variables can influence, among others: Implementation activities and inter-organizational communication. Characteristics of the implementing agency/implementation are Economic and political conditions. George Edward III's model explains that the main problem of public administration is a lack of attention to implementation where the success of a policy can be seen by implementing procedures that are running effectively. Edward III mentions that there are 4 factors that interact with each other in policy implementation, namely (1) communication, (2) resources, (3) disposition (4) bureaucratic structure.

2.1 Management Concept

Management is a process that helps formulate organizational policies and goals or provides oversight on all matters involved in implementing procedures and achieving goals ^[2]. Meanwhile, management is a process, method, management action that helps formulate organizational policies and goals or provides supervision of a matter involved in implementing procedures and achieving goals by using other people's power.

According management can also be defined as the organization of activity. Management can be interpreted as management, which is a process of activities starting from planning, organizing, directing, and supervising the efforts of organizational members and the use of other corporate resources to achieve predetermined organizational goals. Management is a process that helps formulate a policy and organizational goals or a strategy that provides oversight to someone involved in implementing and achieving goals.

2.2 Garbage Concept

Garbage is a general term 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 ^[3], waste is "All forms that are not desired by the owner and are solid." Meanwhile, according to ^[4], 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 of the same kind".

Types of waste are divided into three according to the chemical substances: Organic waste, namely wastes consisting of materials that can be decomposed naturally / biologically, such as food scraps and fallen leaves. This type of waste is also known as wet waste. Inorganic waste is waste consisting of materials that are difficult to biodegrade. The crushing process requires further handling in unique places, such as plastics, cans, and styrofoam. This type of waste is also known as dry waste. Hazardous and toxic waste is from dangerous and poisonous materials such as hospital waste, factory waste, and others.

2.3 Waste Management Concept

According to Law ^[5] concerning Waste Management, what is meant by waste is the residue of daily human activities and natural processes in solid form. Garbage which is the rest of human activities must be managed to not cause environmental pollution and health problems. Waste management is a systematic, comprehensive, and sustainable activity that includes waste reduction and handling.

The waste reduction includes activities to limit waste generation, recycle waste, and reuse trash. Waste management, as referred is an activity that begins with sorting in the form of grouping and separating waste according to the type, amount, and nature of the trash. The next step is collecting and transferring debris from the waste source to the temporary storage site and transportation of the waste from the temporary storage site to the final processing site. Then the trash collected at the last processing site is managed by changing the characteristics, composition, and amount of waste and process to safely return the results of previous processing to environmental media.

2.4 Environmental Concept

According to the Encyclopedia of Science and Technology in ^[6], what is meant by the environment is, "Several conditions outside and affecting the life and development of organisms." Meanwhile, according to ^[6], the environment is "All objects, conditions, circumstances, and influences contained in the space we occupy and affect living things including human life."

Furthermore, according to ^[7], the environment is categorized into three primary groups that stand out, namely: Physical Environment is everything around us in the form of inanimate objects such as houses, vehicles, mountains, air, water, sunlight. Sun and the like. The biological environment is everything that surrounds humans in living organisms other than the humans themselves. For example, all animals, from the big ones, say elephants, to the smallest like germs that cause disease; all the plants from the largest say teak tree to the smallest such as micro-organisms or planktons in the water. Social Environment are other humans around him such as:

2.5 Household Waste Concept

According to the Law of the Republic of Indonesia ^[5], household waste is solid waste that comes from the rest of daily activities in the household, excluding feces and specific waste and from natural processes originating from the household environment. This waste comes from homes or housing complexes.

In line with this, according to ^[8], "mostly household waste is in the form of organic waste, including kitchen waste, leftover flour, vegetables, fruit peels, and leaves and others." Meanwhile, according to ^[9], "Household refuse is a mixed waste consisting of rubbish, garbage, ashes originating from residential areas." Based on research conducted by the Oceanographic Research Center and the Population Research Center, household waste is the most significant contributor to the total national waste, up to 62%. Meanwhile, during the pandemic, household waste is expected to increase. One of them is the increasing use of delivery services in the Greater Jakarta area during the Large-Scale Social Restrictions.

2.6 Waste Management System

According to Law ^[5] concerning Waste Management, it is stated that waste is the residue of daily human activities and the remains of natural processes in solid form. Every day humans carry out activities that produce waste, both organic and plastic waste, and nature, which makes organic waste. The waste generator is any person or natural process that generates waste.

Meanwhile, according to the Regulation of the Minister of Home Affairs ^[10] Article 1, waste is the residue of daily human activities and natural processes in a solid form consisting of household waste and similar household waste. Garbage, according to WHO, is something that is not used, not used, Operational, technical aspects Operational Technical Aspects are the components closest to the waste object. Waste system planning requires a standard pattern of specifications on a transparent basis. The

specification used is the Indonesian National Standard Number 19-2454-2002 concerning Procedures for Waste Management in Settlements. Operational waste management techniques are integral and integrated into a chain with a continuous sequence, namely: storage/container, collection, transfer, transportation, disposal/processing.

^[11] said that the Technical Operational Aspect is one of the efforts to control the growth of waste, but its implementation must still be adjusted to considerations of health, economy, engineering, conservation, aesthetics, and environmental concerns.

Institutional Aspect: The organization's design and selection are adjusted to the government regulations that foster it, the established operational system pattern, capacity system work, and the scope of the main tasks and functions to be handled. The institutional form of waste management is adjusted to the city category.

Aspects of community participation, Without the involvement of the waste-producing community, all planned waste management programs will be in vain. One approach to the community to assist government programs in cleanliness is how to familiarize the community with behavior by the program's objectives. This includes, among others, how to change people's perceptions of orderly and orderly waste management, social factors, structures, and local culture, as well as habits in waste management so far.

2.7 Waste regulation

The Law of the Republic of Indonesia ^[5] concerning Waste Management, gives hope for a sound waste management system because the system is easy to implement and friendly to the environment. This law also regulates how waste should be managed and the duties, responsibilities, and authorities of the government, local government, private sector, and society.

2.8 Household Waste Management

Article 19 of the Law of the Republic of Indonesia ^[5] regulates the management of household waste and waste similar to household waste. The article states that household waste management and similar household waste consists of reducing waste and handling waste.

2.9 Partnership,

District/City Regional Governments individually or jointly can partner with waste management business entities to implement waste management (Article 27). The collaboration as intended is outlined in an agreement between the regency/city-regional government and the business entity concerned. Meanwhile, the procedure for implementing the partnership is carried out by the laws and regulations.

2.10 Community Role

The community can play a role in waste management organized by the Government and Regional Government (Article 28). The role as referred to can be carried out through providing suggestions, considerations, and suggestions to the government—formulation of waste management policies; providing advice and opinions in settlement of waste disputes. Meanwhile, further provisions regarding the forms and procedures for the role of the community as intended are regulated by Government Regulations and Regional Regulations.

3. RESEARCH METHODOLOGY

Research focus, based on the problems and objectives that have been formulated above, the research focus set is:

- a. Implementation of household-scale waste management in Batu City. With indicators ^[12]:
 1. Government Commitment
 2. Human Resources
 3. Infrastructure
 4. Society participation
- b. What factors encourage and hinder the implementation of household-scale waste management policies in Batu City internally and externally.

Research sites, researchers researched the Batu City Environmental Service, located at Jl. Commander Sudirman No. 507, Pesangrahan, Batu District, Batu City, East Java 65313.

The author conducted Batu City Environmental Service research to determine the waste management system carried out based on applicable regulations.

Method of collecting data, in connection with the research activities to be carried out, it is necessary to have data relevant to the research focus to get an overview as a result of the research. Observations, interviews, and informal conversations are all sources of qualitative data. The most commonly used data sources are observations, interviews, and documents, sometimes used together and sometimes individually.

Data analysis technique, data analysis in this study was carried out using an interactive model from Miles, Huberman, and Saldana (2014), which applied four (4) steps in analyzing data.

4. RESEARCH FINDINGS

Batu City is one of 38 regencies and cities located in East Java Province, the formation of Batu City is inseparable from the expansion of the Malang Regency area. In 2001 Batu Administrative City changed its status to Batu City and was ratified by the President of the Republic of Indonesia on June 21, 2001, and on October 17, 2001, Batu City officially became an independent area and was separated from Malang Regency.

Table 1. District Area in Batu City

No.	districts	Area (km2)	Percentage (%)
1.	Rock	45.46	22.83
2.	Junrejo	25.65	12.88
3.	Bumiaji	127.98	64.28
Amount		1999.09	100

Source: BPS Batu City in 2021

Household-Scale Waste Management in Batu City is guided by the Mayor's Regulation concerning Regional Policies and Strategies for the Management of Household Waste and Types of Household Waste. In the regional regulation, the local government handles waste management through sorting, collecting, transporting, processing, and final processing.

Waste sorting is an activity to classify waste containing hazardous and toxic materials and hazardous and toxic waste, quickly biodegradable waste, reusable waste, recyclable waste, and other waste.

The role of homemakers is vital in the waste management process, especially in sorting waste from the source. The author conducted interviews with residents of Pesanggrahan Village on dated January 6, 2022, which stated: "I don't do waste sorting from home because it's useless when the officers pick up the garbage; all the garbage is mixed together when it is transported by the officer's car."

In line with the interview results above, the residents of Bulukerto Village stated that on January 7, 2022, they say that.

"I don't sort waste at home because there's only one trash can at home, so I mix all types of waste into one there."

On different occasions, the author conducted interviews with residents of Mojokerto Village on January 9, 2022, which states that:

"Because I happen to be a member of a waste bank, so I sort waste independently from home, to sort it into two, namely wet waste and dry waste."

From the three interviews above, it can be concluded that most people do not have the awareness to sort waste, only a small number of people do waste sorting independently from home, so there is still mixed garbage.



Figure 1. Trash bin for waste sorting

5. COLLECTION

The household-scale waste collection system in Batu City is carried out using a Door system (directly) and Communal (indirectly), where in the Door to Door system, waste is transported instantly from the source, namely households. In contrast, in the Communal system, before the waste is transported to the Tlekung landfills, waste from each household source will be collected by field officers. After that, it is transported landfills.

The author interviewed with the Head of Waste Management and Hazardous Waste Management on December 10, 2021; he said that:

"Waste collection in Batu City is carried out using various types of vehicles depending on the condition of the service area to be served. Some types of vehicles for collecting and transporting waste use a garbage cart with a capacity of 1000L, some use a Tossa with a capacity of 3000L, and some use a pick-up car with a capacity of 4000L."

5.1 Government Commitment

The support from the Batu City Government, which in this case is carried out by the highest leadership in the Batu City bureaucracy, namely the Mayor of Batu regarding the implementation of household-scale waste management, explained the Head of the Batu City Environmental Service on December 10, 2021, as follows:

"Support in terms of policy regulation exists, where we as an agency in carrying out our duties, of course, all directions how this system is a policy and responsibility to the region, we as an office carry out technically the tasks given by the mayor."

6. CONCLUSION

Based on the results of the research and discussion above, conclusions can be drawn from research related to the Implementation of Household Scale Waste Management Policies in Batu City as follows:

The Batu City Government supports the implementation of household-scale waste management by issuing regulations in mayoral instructions and participating in every household-scale waste management activity. In addition, the existence of Standard Operating Procedures in household waste management impacts the implementation of good and targeted household waste management. The government's commitment is also to carry out coordination meetings regularly. In addition, to reach a wider community, the Batu City Environment Service created an Awas-E application that makes it easier for the public to communicate with the Environmental Service to obtain or provide information related to household waste management problems.

The apparatus resources of the Batu City Environmental Service are limited. However, the current apparatus understands and controls household-scale waste management. The facilities and infrastructure owned by the Batu City Environment Service are very lacking and narrow, especially for dum trucks.

Community participation is still low in sorting waste from home. Still, the role of the Batu City Environment Service in providing counseling and the Waste Bank in delivering education to the public that waste can be a valuable item that can encourage community participation.

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