

## Effective Waste Management and Empowerment

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### ABSTRACT

This study aims to analyze waste management strategies in Manggala Sub-district, Makassar City, using SWOT analysis to identify supporting and inhibiting factors. Data were collected through purposive sampling, observation, interviews, and case studies, using both qualitative and semi-quantitative methods. Results indicate that waste management remains suboptimal due to limited TPS 3R implementation, inadequate infrastructure, and low public awareness. A strategic approach is proposed to improve conditions and promote a cleaner environment. The study concludes that TPS 3R has been introduced and open dumping practices are being reduced.

## INTRODUCTION

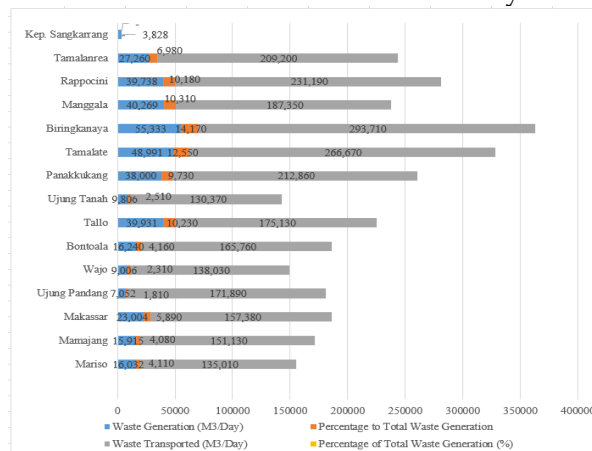
Waste management issues in Indonesia, especially in Makassar City, are increasingly urgent to address. With rapid population growth, the volume of household waste is also increasing significantly. According to WHO, waste is unused and discarded material resulting from human activities. The inability to take care of waste management properly can cause serious problems, such as flooding, soil, water, and air pollution, and the formation of slum areas that damage the city structure (WHO, 2021).

The community has a great responsibility in waste management, starting from sorting waste at home. Separating waste into organic and non-organic categories before bringing it to the collection point is a basic step that can significantly reduce the amount of waste. This process requires continuous education and counseling so that people understand the importance of waste management and its impact on the environment (Yandri et al., 2023).

People's views on waste management in cities, especially in tourist areas, are influenced by various factors. The following are some of the points that often appear in people's minds. Low Environmental Awareness: In some locations, people have not fully realized the importance of good waste management. This can be seen in tourist areas, where waste is often piled up due to the lack of adequate trash bin facilities or a lack of understanding about the correct way to sort waste (Elly Kristiani Purwendah & Daniel Joko Wahyono, 2022)

Adverse Impact on the Tourism Sector: Negative perceptions of waste management can damage the reputation of tourism. Visitors who are bothered by scattered waste will likely discourage them from visiting the location. Thus, efforts to improve cleanliness are essential in creating a good impression on tourist trails (Andrariladchi & Arunotai, 2021).

Education and Awareness Campaigns: Effective education programs and campaigns on waste management are needed to improve public perception. A successful campaign can change the perspective of the community, especially tourists, to be more disciplined in disposing of waste in its proper place and reducing the use of single-use plastics. Data regarding empowerment and waste management in 15 sub-districts in Makassar City are as follows:



**Figure 1. Chart of Waste Generation by Sub-district in Makassar City in 2025.**  
gSource: Data from the Makassar City Environment Agency, 2025

From the chart above, the sub-district with the highest waste generation M3 / day is biringkanaya sub-district, totaling 553,330, the percentage of total waste generation is 14.17%, transported waste (M3 / day) is 293,710, and the percentage of total waste generation is 53.080%. Then the middle waste generation M3 / day, namely the Manggala sub-district, amounted to 402,690, the percentage of total waste generation was 10.310%, the transported waste (M3 / day) was 187,350, and the percentage of total waste generation was 46.520%. And the lowest waste generation M3 / day is the Sangkarrang Islands 38.28%, the percentage of total waste generation is 0.98%, the transported waste (M3 / day) is (-), and the percentage of total waste generation is 0.00%.

With the growth of urbanization and the rapid development of the tourism sector, the amount of waste generated has also increased. Waste that is not handled properly can cause accumulation in public areas, such as tourist trails, open spaces, and residential neighborhoods, which can risk polluting nature (Hunt & Voulvoulis, 2021). However, people's views on waste management vary widely. Some of the factors that influence these views include people's environmental awareness, education on waste management, and involvement of stakeholders in providing infrastructure and policies that support effective waste management (Olatayo et al., 2022).

With the increasing awareness worldwide of the importance of wise waste management, more and more actions are being taken by non-governmental organizations to educate the public. Campaigns on recycling, reducing the use of plastics, and the importance of sorting waste at home are expected to change people's views and encourage them to be more sensitive to waste issues around them (Damayanti et al., 2022).

In line with several studies, Magelang City is experiencing difficulties in providing landfills, as the storage capacity of Banyuurip landfill has reached its limit and expansion is no longer possible. The only approach to reduce waste production and residue transferred to landfill is to involve the community and all stakeholders in waste management (Marleni et al., 2022). Then to achieve effective waste management, it is crucial to involve not only formal/government institutions, but also individuals/informal/volunteers to create a healthy environment. This research was conducted to determine the factors that increase community participation in waste management policies (Brotosusilo et al., 2020). And the purpose of this research is to analyze the personality traits and performance of the Provincial House of Representatives (DPRD) in carrying out the legislative function in Southeast Sulawesi Province (Saprudin et al., 2022).

## LITERATURE REVIEW

### *Jurgen Hubermas' Emancipatory-Critical Theory*

There has been a gradual shift in the way we understand the 'theoretical' and 'practical' aspects of theory. The result of this change has created a situation of 'distance' between classical political studies and today's social reality. The classical approach to politics now feels alien to us (Fatih, 2021). Politics and the social theory that supports it seem to be something 'far away',

because there is a strong tendency to emphasize normative aspects, and there is also a process of marginalization of knowledge claims that form the basis of political decisions by considering it as a kind of science that cannot be justified epistemologically. Therefore, if we observe recent developments in the world of 'politics', it seems that the distance between scientific study and the 'world of practice' is widening.

Jürgen Habermas, born in 1929, was a modern thinker who sought to answer these fundamental questions through the tradition known as Critical Theory. Critical Theory, understood as 'social theory designed with a practical purpose', is thought derived from deep reflection on the nature of knowledge, the structure of social research, the normative basis of social interaction, and trends in the political, economic, and socio-cultural aspects of our time (Sholihah, 2021).

### ***Social Consciousness/Change Theory***

Social consciousness can be understood as a recognition of the problems faced by society and diverse communities every day to recognize the challenges experienced by society. Efforts to achieve social awareness are made through interaction and learning. According to (Cavanaugh et al., 2022), self-awareness or known as Self Awareness is an important fundamental element to show clarity and understanding of one's behavior. Meanwhile, (Ibrahim et al., 2022) opinion regarding social awareness states that self-awareness is related to deep introspection regarding personal identity, self-reflection, attention to the soul and thoughts, and deepening knowledge including feelings and emotions. (Widarni & Bawono, 2021) states that "awareness is the attitude of someone who consciously obeys all the rules and realizes their duties and responsibilities". In the Big Indonesian Dictionary, it is said that "awareness is alertness, a state of understanding, or things that are felt or experienced by someone". Based on this explanation, it can be concluded that awareness is a condition in which a person realizes the rights and obligations that must be fulfilled.

### ***Society***

Society is often discussed with the English term "society" which comes from the Latin word "socius" meaning "friend". In Indonesia, the term society is grammatically derived from the Arabic root "syaraka" which means "to participate, to take part". Society can be defined as a group of individuals who "get along" with each other, or in scientific terms expressed as "interacting" with each other (O'Mahony, 2023). According to (Wolska & Creaven, 2023), society is a collection of people who live together for a long duration of time, have a similar culture, live in a certain area, and undergo most of the activities in the group. In this study, the community in question is the population living in Makassar City, especially in Biringkanaya Sub-district.

### ***General Purpose of Waste***

Waste is a term commonly used to refer to solid waste. Waste consists of the remains of materials that have gone through various processes, either

because the main part has been taken, due to processing, or because it is no longer useful from a socio-economic perspective, so it has no value and can cause pollution or disturb the environment (Whiteman et al., 2021).

Based on (Sabourian et al., 2020), waste can be divided into two categories based on the chemical nature of the elements, namely:

1. Organic waste which is often referred to as wet waste, and
2. Non-organic waste known as dry waste.

According to (Loizou et al., 2021), here are some sources of waste:

1. Waste originating from residential areas,
2. Waste generated from public facilities and trading activities,
3. Waste from community services managed by the government,
4. Waste from the industrial sector,
5. Waste from the agricultural sector

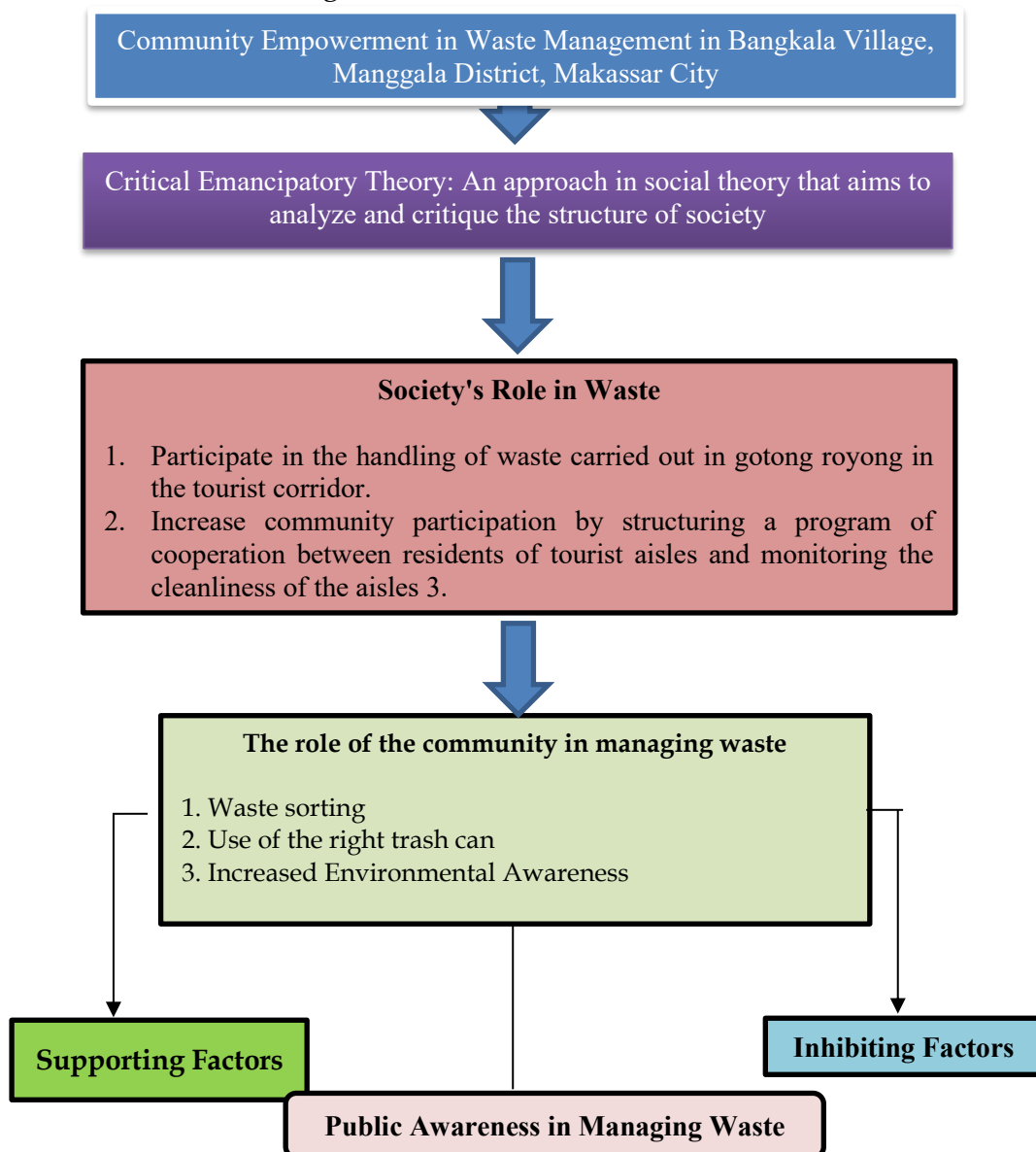


Figure 2. Conceptual Framework, Qualitative and quantitative research methods (Sardana et al., 2023)

Source : Book Section Qualitative and quantitative research methods

## METHODOLOGY

The type of research conducted in this study is descriptive research, using an approach that combines semi-quantitative and qualitative methods. This research took place in Manggala sub-district, Makassar City, in March and April 2025. This location was chosen for the purpose of analyzing how waste-related handling and empowerment in Manggala sub-district, focusing on the theory (Whiteman et al., 2021) of the community's role in waste management, as well as supporting and inhibiting factors, in the hope of increasing community awareness regarding waste management. Data collection techniques with Non-Probability Sampling with Purposive Sampling, which is a sampling technique based on the researcher's consideration of which samples are most suitable, useful and considered to represent a population (representative) (Kurniasih, 2022). The informants involved in this research include Manggala sub-district officials and the local community, including the Head of Sub-district, Secretary of Sub-district, Head of Section, Staff, and residents. The data analysis techniques applied in this research include semi-quantitative and qualitative methods through observation, interviews, and case studies, where statistical analysis is also applied with a direct approach in the field.

## RESEARCH RESULT

“The results of this study discuss the analysis of information obtained by the author at the survey site in the field. The main data of this study came from interviews with predetermined resource persons. In addition, secondary data is also used to complement this research obtained from related documents to increase the strength of the analysis results in this study. The findings of this study outline the strategy of community-based waste management and empowerment in Manggala Sub-district, Makassar City, South Sulawesi Province.”

### *Community-Based Waste Management and Empowerment in Manggala Sub-district*

#### 1. Technological Aspects

“The development of technology today provides an opportunity for anyone to take advantage of it. Local governments need to utilize the right technology in order to provide the best service to the community, because technology can facilitate the implementation of various tasks so that work can be done better and more efficiently.”

#### 2. Community participation aspect

“Community involvement plays a very important role in improving waste management. Community activities are needed to ensure that waste management can take place effectively and without obstacles. Through public awareness and attention, the local government can carry out the waste management process better and more efficiently.”

#### 3. Operational Aspect

“This operational aspect is the best effort to ensure that resources are utilized to the maximum extent possible. In terms of waste management,

this includes services to the community that are implemented correctly and appropriately through the utilization of existing resources. The goal is for the service to take place as expected. The operational aspect also plays an important role in determining the choice of technology, human resources, and methods to be applied in the waste management process. This ensures that waste management can be carried out properly and smoothly, because the steps that need to be followed to carry out the management correctly have been determined.

## **DISCUSSION**

### *Environmental Analysis of Supporting and Hindering Factors*

#### *Supporting Factors*

The analysis of environmental supporting elements discusses the elements that influence the strengths and opportunities within Manggala Sub-district in Makassar City. The explanation of these factors is based on the observations, interviews, and documentation that have been conducted. Some of the identified strengths and opportunities related to waste management are:

#### *Strengths*

Strengths serve as supporting elements in the implementation of the program to achieve the expected targets in Manggala Sub-district, Makassar City. In this study, information and data were obtained through documentation, interviews, and observations. Through this method, researchers found and described the factors that become strengths in waste management, namely:

#### *Organizational Structure, Vision, Mission and Function Duties of Manggala Sub-district, Makassar City*

This is very helpful in the waste management process in Panakukkang sub-district, which has been regulated in the provisions. The existence of an organizational structure, as well as clearly defined duties and functions, gives responsibility to each employee. Evaluation can be done based on the performance of employees who carry out programs and activities according to their respective responsibilities.

#### *Adequate Human Resources*

The workforce in Manggala Sub-district is sufficient and of good quality. This is one of the main objectives in carrying out the functions and duties of the institution. Effective management requires the presence of qualified human resources, including employees who have good performance. In addition, it is important to classify employees based on ability and experience according to applicable procedures, given the important role of human resources in waste management.

### ***Opportunities***

After collecting data and information through documentation, interviews, and observations regarding waste management in Manggala Sub-district, researchers explain the factors that can be an opportunity to support the waste management process in Manggala Sub-district, Makassar City, among others:

#### *Local Government Support in Waste Management*

Support from the local government in waste management is very important to deal with the waste problem, which is one of the responsibilities in Manggala Sub-district. In carrying out tasks and functions, of course, guidelines and regulations are needed in the implementation of programs and activities. In dealing with waste problems, reference is made to Law Number 18 of 2008 concerning Waste Management, South Sulawesi Province Regional Regulation Number 6 of 2022 concerning Regional Waste Management, and Makassar City Regional Regulation Number 4 of 2011 concerning Waste Management.

#### *Social, cultural, demographic, and environmental forces*

Makassar City should utilize the existing space to be used as a waste management site so that waste can be managed more effectively. With a large enough area, the Makassar City government should be able to build TPS 3R in each sub-district so that waste from residents can be collected and managed properly.

In relation to waste management, it needs to be explained that people in Manggala sub-district have begun to realize the risks posed by waste if it is not managed properly. However, they still apply inappropriate ways of dealing with existing waste. This is due to a lack of understanding about effective waste management to create a clean, healthy and quality environment.

#### *The existence of TPS 3R in Manggala sub-district*

It is expected that with TPS 3R, the environment will become cleaner and healthier, and increase public awareness about the importance of sorting and separating waste properly. One of the other benefits of TPS 3R is the reduction in the amount of waste taken to landfills through sorting and separating organic and inorganic waste, as well as processing recyclable waste. In addition, with TPS 3R, the negative impact of waste on the environment can be minimized by separating organic and inorganic waste, reducing greenhouse gas emissions from decomposing organic waste in landfills, and improving air and water quality around the TPS. Waste that was previously considered as waste can also be reused as raw material for new products or as an alternative energy source.

### ***Barrier Factors***

Barrier factors are elements that are set up outside the agency. These barriers include weaknesses and threats. This research is based on observations and interviews. Included in the category of inhibiting environment according to

the researcher is the possibility and risk in waste management carried out by Manggala Sub-district in Makassar City, namely:

#### *Weaknesses*

The number of dysfunctional waste banks in Manggala sub-district is quite high. The sub-district has 56 waste banks, of which only 22 are active, 6 are newly established, and 26 are in a dormant state. In relation to the defunct waste banks, it is important for the government to address the situation of the 26 waste bank units that are no longer operating. Many communities have not yet realized how important good waste management is.

#### *Facilities and Infrastructure in Waste Handling*

The availability of facilities and infrastructure in Manggala Sub-district, Makassar City, is still very limited and does not match the existing needs. This limitation is an obstacle for employees and waste collectors in carrying out their duties. The condition of waste management facilities and infrastructure in Manggala Sub-district can be said to be inadequate to support effective waste management. Therefore, this issue needs serious attention from the Manggala sub-district government. Facilities and infrastructure are important tools for creating good and efficient waste management.

#### *Threats*

Obstacles that interfere with the waste management process in Makassar City, especially in Manggala sub-district. Here are some threats related to waste management:

#### *Technological developments in waste management*

Waste management methods in Makassar City still rely on traditional methods, such as open dumping. This condition has resulted in the city's waste management not being optimal, as Makassar has not used modern technology due to several factors, such as the lack of adequate facilities and funds.

#### *Implementation of waste management*

Waste management in Makassar City still relies on traditional methods by collecting waste from temporary disposal sites (TPS), then transported to the final disposal site (TPA) to be piled up without specific management. This causes the accumulation of waste to increase every year. Waste management should be improved; if waste is managed properly, it will have economic value and benefit the welfare of the community as well as create a better environment.

In line with some research results on effective waste handling and empowerment, among others, this program intends to develop a waste management strategy in Magelang city that starts from the smallest unit, namely RT and RW. Based on the findings, waste management solutions for the community of RW 02, Magelang Village, Magelang Tengah Sub-district can be classified as socialization strategies, work plans or regulations, resource

procurement, cooperation, and empowerment. Furthermore, the research findings revealed that an effective strategy should include various activities that run simultaneously, progressively, and sustainably, as well as the participation of various parties (community, local government, and universities) to ensure effective management implementation (Marleni et al., 2022). Then, the gap found in this study shows that the DKI Jakarta Provincial Government has a high tendency to increase individual participation in waste management by maximizing control over the factors mentioned above (especially empowerment), and also by increasing the frequency of citizen involvement in social community activities at the grassroots level (Brotosusilo et al., 2020). And the results showed that related to the personality and behavior of DPRD members in carrying out the legislative function that behaves well in several cases at the Ministry of Law and Human Rights, the need for regulations, each article by article can be implemented properly and increase the capacity of DPRD members of Southeast Sulawesi Province. From the agenda of the ratification of this regional regulation, it is considered capable of increasing the capacity of DPRD members in carrying out their functions and conducting supervision so that budgeting is more responsive. The capacity of DPRD members in carrying out the legislative function in Southeast Sulawesi Province is still not effective, this is due to the educational background and employment background of current DPRD members who are in fact from among businessmen and wives of officials (Saprudin et al., 2022).

### ***Research Findings***

The Manggala sub-district government has an opportunity to improve the quality of waste management infrastructure, for example by improving waste transportation facilities and waste banks. They can build TPS 3R for organic waste to be used for composting, and provide separate waste banks for organic and inorganic waste in each kelurahan, so that waste can be separated according to its type. However, this is hampered by limited facilities and a lack of public awareness regarding waste management. Through strategy development based on internal and external factors, the Manggala sub-district government can create a clean and comfortable environment.

The author also found that many people still burn waste as a way of handling, showing a lack of understanding of the risks posed by such actions.

## **CONCLUSIONS AND RECOMMENDATIONS**

The results of the study conducted by the researcher regarding waste management as well as the strategies applied in the sub-district Manggala focused on handling waste in Makassar City. Thus, the researcher draws the following conclusions:

### ***Waste Handling in Manggala Sub-district with a Community-Based Approach***

Waste handling in Panakukkang Sub-district can be analyzed from three (3) aspects as follows:

- a. Technological Aspects, in waste management in Manggala sub-district, existing methods and technologies are not sufficient to overcome the

waste problems faced. Currently, Manggala sub-district still relies on a traditional method called open dumping, where waste is disposed of directly and piled up in landfills without going through further management or treatment.

- b. Aspects of Community Participation, community involvement in waste management in Manggala Sub-district is still fairly low and lack of attention to waste problems that can cause negative consequences. This can be seen from the slowness of waste transporters in transporting waste to the Final Disposal Site (TPA) because residents often do not dispose of waste on time at the Temporary Shelter (TPS). In addition, there are still many people who litter and burn waste without sorting it first, so the potential of waste utilization cannot be optimized."
- c. Operational Aspects, waste haulers in Manggala Sub-district have performed their duties quite well. However, there are challenges in improving their performance caused by the lack of adequate facilities and infrastructure in Kecamatan Manggala. This situation hinders the process of better waste management in the area.

#### ***Approaches to Waste Management in Manggala Sub-district***

Approaches that have been analyzed using the SWOT method to deal with waste in Manggala Sub-district include:"

- a. Establishing a TPS 3R system in the Manggala sub-district area
- b. Developing a long-term program for waste management.
- c. Maximize services in waste management.
- d. The government plays a role in activating waste banks.
- e. Conducting socialization about the implementation of TPS 3R to the community.
- f. Improve the work structure in waste management clearly so that the community can understand how to implement it.
- g. Inviting the community to participate in waste management.
- h. Improve supporting facilities and amenities in waste management.
- i. Utilizing appropriate technology for waste management.

The strategy analysis prepared considers internal and external factors in Manggala Sub-district, so that it is hoped that waste management can take place properly and create a clean environment from waste.

Research Limitations. This research has the main limitation, namely the time available. The research was also limited to only one Regional Apparatus Organization (OPD).

#### **ADVANCED RESEARCH**

Future Research Directions. The author realizes that the results of this research are still preliminary. Therefore, the author encourages other colleagues to continue research in the same location related to community-based waste management strategies in Manggala District, Makassar City, South Sulawesi Province.

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