

Waste Management Strategy Based on Community Participation in Improving Environmental Cleanliness in East Binjai District, Binjai City

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Abstract

Waste management is one of the environmental problems that are often faced by urban areas, including in East Binjai District, Binjai City. Population growth, economic activity, and increasing public consumption patterns contribute to the increase in the volume of waste produced every day. If not managed properly, waste can cause various negative impacts such as environmental pollution, public health disturbances, and decreased quality of environmental cleanliness. Therefore, a waste management strategy is needed that not only focuses on the role of the government, but also involves the active participation of the community. This study aims to analyze waste management strategies based on community participation in improving environmental cleanliness in East Binjai District, Binjai City. This study uses a qualitative approach with a descriptive type of research. The data collection technique was carried out through in-depth interviews, field observations, and documentation involving informants from elements of local government, waste managers, community leaders, and local communities. Data analysis is carried out using an interactive analysis model which includes data reduction, data presentation, and conclusion drawn. The results of the study show that community participation has an important role in supporting the success of waste management, especially through waste sorting activities, the development of waste banks, and increasing environmental awareness. Optimizing cooperation between the government and the community is expected to be able to create a cleaner, healthier, and more sustainable environment.

Keywords: Waste Management, Community Participation, Environmental Cleanliness.

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Introduction

The problem of waste is one of the increasingly complex environmental issues in urban areas. The growth of the population, the development of economic activities, and the increase in people's consumption patterns cause the volume of waste produced every day to increase. According to a report from the World Bank in *What a Waste 2.0*, the amount of global waste generation is estimated to reach more than 2 billion tons per year and will continue to increase if not managed sustainably (Kaza et al., 2020). This condition shows that waste management is a big challenge for local governments in maintaining the quality of the environment and public health.

In Indonesia, the problem of waste management is also still a major issue in the development of the urban environment. Based on data from the Ministry of Environment and Forestry (MoEF), national waste generation reaches more than 68 million tons per year, with most of it coming from urban areas (MoEF, 2023). Waste management that is not optimal often causes various negative impacts such as soil, water, and air pollution, and has the potential to cause health problems for the community. Therefore, the Indonesian government has issued a waste management policy through Law Number 18 of 2008 concerning Waste Management which emphasizes the importance of integrated waste reduction and handling and involves community participation.

The concept of modern waste management not only focuses on transportation and final disposal, but also emphasizes the reduce, reuse, and recycle (3R) approach as well as the active involvement of the community in the management process. Community participation is an important factor in the success of waste management, especially in waste sorting activities from the source, reducing the use of single-use materials, and developing waste bank programs. According to research by Suryani and Hadi (2021), the success of community-based waste management programs is greatly influenced by the level of environmental awareness, government policy support, and the existence of adequate waste management facilities.

East Binjai District as one of the administrative areas in Binjai City also faces challenges in urban waste management. The increase in settlement, trade, and service activities in the area has caused the volume of waste produced by the community to continue to increase. However, the available waste management system still faces various obstacles, such as limited waste management facilities and infrastructure, lack of public awareness in sorting waste, and the lack of optimal community-based waste management programs. This condition has the potential to cause a buildup of garbage at several points in the residential environment which can interfere with the cleanliness and health of the environment.

In addition, community participation in waste management activities still needs to be increased. Some people still view that waste management is entirely the responsibility of the local government, so that community involvement in activities such as waste sorting, composting, and waste bank management is still relatively limited. In fact, various studies show that the success of waste management is greatly influenced by the involvement of the community as the main actor in producing and managing household waste (Putri & Wibowo, 2022).

Based on these conditions, a more effective waste management strategy is needed by involving active community participation as part of efforts to improve environmental cleanliness. The community-based waste management approach is expected to be able to increase environmental awareness, reduce the volume of waste disposed of in landfills, and create a clean and healthy residential environment. Therefore, this research is important to analyze waste management strategies based on community participation in improving environmental cleanliness in East Binjai District, Binjai City.

Problem Identification

Based on the background of the problems that have been described earlier, some of the problems that can be identified in the research on waste management strategies based on community participation in improving environmental cleanliness in East Binjai District, Binjai City are as follows:

1. The increasing volume of household waste generation in the Binjai City area, especially in East Binjai District, is in line with population growth and community economic activities.
2. Waste management systems that are not optimal, especially in terms of sorting waste from its source and limited waste management facilities and infrastructure at the environmental level.
3. Low public awareness and participation in waste management activities, such as household waste sorting, recycling activities, and involvement in community-based waste management programs.
4. Lack of strengthening community-based waste management programs, such as the development of waste banks, environmental education activities, and community-based waste reduction programs.
5. There is not optimal coordination between the local government and the community in an effort to improve environmental cleanliness through sustainable waste management.
6. There are still found waste disposal behaviors that are not in accordance with the rules, such as careless waste disposal that can cause environmental pollution and interfere with public health.

Problem Formulation

Based on the problem identification that has been described earlier, the formulation of the problem in the research entitled "Waste Management Strategy Based on Community Participation in Improving Environmental Cleanliness in East Binjai District, Binjai City" can be formulated in several research questions as follows:

1. What are the existing conditions of waste management in East Binjai District, Binjai City?
2. What is the level of community participation in waste management activities in East Binjai District, Binjai City?
3. What are the factors that affect community participation in waste management in East Binjai District, Binjai City?
4. What is the role of community-based waste management in improving environmental cleanliness in East Binjai District, Binjai City?
5. What are the strategies that can be done to improve waste management based on community participation to create a clean and healthy environment in East Binjai District, Binjai City?

Research Objectives

Based on the formulation of the problem that has been described, the research objectives in the research entitled "Waste Management Strategy Based on Community Participation in Improving Environmental Cleanliness in East Binjai District, Binjai City" are as follows:

1. To find out the existing conditions of waste management in East Binjai District, Binjai City.
2. To analyze the level of community participation in waste management activities in East Binjai District, Binjai City.
3. To identify factors that affect community participation in waste management in East Binjai District, Binjai City.
4. To analyze the role of community-based waste management in improving environmental cleanliness in East Binjai District, Binjai City.

5. To formulate a waste management strategy based on community participation to improve environmental cleanliness in East Binjai District, Binjai City.

Literature Review 2.1. Waste Management

Waste management is one of the systematic efforts made to reduce the negative impact of waste on the environment and public health. According to Law Number 18 of 2008 concerning Waste Management, waste management is an activity that includes the reduction and handling of waste that is carried out systematically, comprehensively, and continuously. Waste reduction includes activities to limit waste generation, regeneration, and reuse of waste, while waste management includes sorting, collection, transportation, processing, and final processing activities.

In the context of sustainable development, waste management no longer only focuses on final disposal, but also emphasizes the concept of 3R (reduce, reuse, recycle). This approach aims to reduce the amount of waste that enters landfills and encourage the reuse of resources that still have economic value. According to a World Bank report, effective waste management requires integration between government policies, waste management infrastructure, and active community involvement (Kaza et al., 2020). Therefore, a good waste management system must involve various parties, both the government, the community, and the private sector.

In addition, effective waste management must also be supported by the availability of adequate facilities and infrastructure such as temporary shelters (TPS), waste processing facilities, and an organized waste transportation system. According to research by Suryani and Hadi (2021), integrated waste management is able to reduce the volume of waste disposed of in landfills and improve the quality of the urban environment. Thus, good waste management is one of the important factors in creating a clean and healthy environment.

2.2. Community Participation

Community participation is the active involvement of the community in the process of planning, implementing, and evaluating a development program. In the context of waste management, community participation is very important because the community is the party that directly produces waste in daily life. According to Cohen and Uphoff (2019), community participation can be realized through various forms of involvement, such as participation in decision-making, implementation of activities, utilization of program results, and evaluation of development activities.

Community participation in waste management can be realized through various activities such as household waste sorting, reducing the use of single-use materials, and involvement in waste bank programs or recycling activities. According to research by Putri and Wibowo (2022), the success of community-based waste management programs is greatly influenced by the level of environmental awareness, community education, and support from local governments in the form of waste management policies and facilities.

In addition, community participation is also closely related to the level of public awareness and concern for the environment. The higher the level of public awareness of the importance of protecting the environment, the greater the chance of success of the waste management program carried out (Hasibuan et al., 2025). Therefore, education and socialization about the importance of waste management are important factors in increasing community participation in maintaining environmental cleanliness.

2.3 Environmental Cleanliness

Environmental cleanliness is an environmental condition that is free from dirt, garbage, and various sources of pollution that can interfere with people's health and comfort (Tarigan et al., 2021). A clean environment not only has a positive impact on public health, but also creates a more comfortable and aesthetically pleasing environment. According to the Ministry of

Environment and Forestry, environmental cleanliness is one of the important indicators in realizing good and sustainable environmental quality (KLHK, 2023).

An environment that is not maintained can cause various problems such as water, soil, and air pollution, as well as become a place for the development of various diseases. Garbage that accumulates in residential environments can also cause clogging of drainage channels that have the potential to cause flooding, especially during the rainy season. Therefore, maintaining the cleanliness of the environment is a shared responsibility between the government and the community.

Efforts to improve environmental cleanliness can be carried out through various programs such as community-based waste management, mutual cooperation activities, and environmental awareness campaigns. According to research by Rahmawati and Siregar (2021), community involvement in environmental cleanliness activities is able to increase collective awareness in protecting the environment and creating a healthier and more sustainable environment. Thus, environmental cleanliness does not only depend on government policies, but also on the active participation of the community in protecting and maintaining its environment.

Research Methodology 3.1. Approaches and Types of Research

This study uses a qualitative approach with a descriptive type of research. A qualitative approach is used to understand social phenomena in depth based on the perspectives and experiences of the informants involved in the research. According to John W. Creswell (2021), qualitative research aims to explore and understand the meaning that is considered to come from social or humanitarian problems through the process of in-depth data collection.

The descriptive approach was chosen because this study seeks to systematically describe the conditions of waste management based on community participation and the strategies carried out in improving environmental cleanliness. According to Lexy J. Moleong (2021), descriptive qualitative research aims to describe phenomena factually and accurately based on data obtained in the field without manipulating research variables.

The type of research used is a case study, which is research that studies a phenomenon in depth in a real-life context. According to Robert K. Yin (2021), case studies are used to answer research questions related to the "how" and "why" of a phenomenon occurring in a certain context. In this study, a case study was used to analyze waste management strategies based on community participation in East Binjai District, Binjai City.

3.2. Research Location and Time

This research was carried out in East Binjai District, which is one of the sub-districts in Binjai City. This location was chosen purposively because the area has waste management problems related to the increase in community activities and the need for a more effective waste management system.

According to Sugiyono (2021), the purposive technique is used to determine the research location that is considered most relevant to the research objective. Thus, the election of East Binjai District is expected to provide a clear picture of the condition of community-based waste management in improving environmental cleanliness.

The research implementation time is planned to last for three months which includes the research preparation stage, data collection in the field, data analysis, and the preparation of research reports.

3.3. Research Informant

The informants in this study were selected using the purposive sampling technique, which is the selection of informants who are considered to have knowledge and experience related to the management of public green open spaces in the research area. This technique

allows researchers to obtain relevant and in-depth data regarding the phenomenon being studied.

According to John W. Creswell (2021), purposive sampling is an informant selection technique based on the consideration that the informant has information relevant to the purpose of the research.

The informants in this study include:

- a. Local government officials, especially from the Binjai City Environmental Service.
- b. Officers or managers of temporary shelters (TPS) and waste management.
- c. People who live in the East Binjai District area.
- d. Community leaders or environmental activists involved in environmental cleanliness activities.

The selection of informants aims to obtain comprehensive information about the condition of waste management and community participation in maintaining environmental cleanliness.

3.4. Data Collection Techniques

The data collection technique in this study is carried out through the following methods:

a) In-depth Interview

In-depth interviews were conducted to obtain information directly from informants regarding the condition, management, and problems of public green open spaces in East Binjai District. According to Michael Quinn Patton (2021), in-depth interviews are a data collection technique that allows researchers to explore informants' experiences, views, and perceptions more comprehensively.

b) Field Observation

Observation was carried out by directly observing the condition of the public green open space at the research site, such as vegetation conditions, supporting facilities, the level of utilization by the community, and environmental maintenance aspects. According to James P. Spradley (2021), field observation allows researchers to obtain empirical data about behaviors and activities that occur in the research environment.

c) Documentation

Documentation techniques are used to collect secondary data in the form of official documents, local government reports, policies related to green open spaces, as well as photos of activities or conditions of green open spaces at the research site. Documentation can also come from government agency archives or other data sources relevant to the research (Sugiarto et al., 2024).

3.5. Data Analysis Techniques

The data analysis in this study used the Miles, Huberman, and Saldaña (2021) model, which includes three stages:

- a) Data Reduction: The process of selecting, focusing, and simplifying data from interviews, observations, and documentation.
- b) Data Presentation: Organize data in the form of narratives, tables, or charts to facilitate conclusion drawn.
- c) Drawing Conclusions: Make interpretations of the patterns found and compile research findings.

3.6. Data Validity Test

To ensure the validity of the data, **credibility, transferability, dependability, and confirmability** tests were carried out as described by Lincoln and Guba (in Sugiyono, 2021). Source triangulation techniques and methods are used to test the accuracy of the data collected.

Results

4.1. What is the existing condition of waste management in East Binjai District, Binjai City?

Based on the results of research conducted in East Binjai District, which is part of the administrative area of Binjai City, the current waste management condition still faces several challenges in terms of the management system and the availability of infrastructure facilities. In general, the waste management system in this region still relies on the pattern of collecting waste from households to temporary shelters (TPS) before finally being transported to landfills.

The results of observations show that most of the waste produced by the community comes from household activities such as organic waste, plastic, paper, and other household waste. However, the process of sorting waste from the source is still not running optimally. Most people still mix organic and inorganic waste, making it difficult to process and recycle waste.

In addition, the limitation of waste management facilities and infrastructure such as the number of public garbage cans, waste processing facilities, and waste transport vehicles is also one of the obstacles in waste management in this region. This condition causes the accumulation of garbage to be found at several points in the residential environment which can interfere with the cleanliness and comfort of the environment.

4.2. What is the level of community participation in waste management activities in East Binjai District, Binjai City?

The results of the study show that the level of community participation in waste management activities in East Binjai District is still at a sufficient level but not optimal. Some communities have shown concern for environmental cleanliness through mutual cooperation activities, environmental community service, and involvement in environmental cleanliness programs organized by the local government.

The community has also begun to be involved in household waste sorting activities and collecting waste that still has economic value such as plastic, paper, and metal for resale. However, the participation is still limited to some community groups and is not evenly distributed in all sub-districts in East Binjai District.

The lack of public understanding of the importance of good waste management is one of the factors that affect low community participation. Therefore, sustainable environmental socialization and education efforts are needed so that the community better understands the negative impact of waste on the environment and health.

4.3 What are the factors that affect community participation in waste management in East Binjai District, Binjai City?

Based on the results of the study, there are several factors that affect the level of community participation in waste management in East Binjai District. The first factor is the level of public awareness and knowledge about the importance of maintaining environmental cleanliness. People who have a high level of environmental awareness tend to be more active in waste management activities.

The second factor is the availability of waste management facilities and infrastructure. The existence of facilities such as garbage cans, temporary shelters, and adequate waste transportation services can encourage the community to be more orderly in disposing of waste. On the other hand, limited facilities can cause people to throw garbage carelessly.

The third factor is policy and program support from local governments. Community-based waste management programs carried out by relevant agencies, such as the Environment Agency, have an important role in increasing public awareness and participation in maintaining environmental cleanliness.

4.4 What is the role of community-based waste management in improving environmental cleanliness in East Binjai District, Binjai City?

Community-based waste management has a very important role in improving environmental cleanliness in East Binjai District. Through the active involvement of the community in waste management activities, various environmental problems can be minimized, such as the accumulation of waste in residential environments and environmental pollution.

One form of community-based waste management that can be applied is a waste sorting program from the source and the development of waste recycling activities that have economic value. In addition, mutual cooperation and environmental service activities that directly involve the community can also increase collective awareness in maintaining environmental cleanliness.

Community-based waste management can also encourage the formation of clean and healthy living behaviors among the community. With the involvement of the community in maintaining the cleanliness of the environment, the residential environment becomes cleaner, healthier, and more comfortable to live in.

4.5 What are the strategies that can be implemented to improve waste management based on community participation to create a clean and healthy environment in East Binjai District, Binjai City?

Based on the results of the research, there are several strategies that can be carried out to improve waste management based on community participation in East Binjai District. The first strategy is to increase socialization and education to the public about the importance of good waste management. Educational activities can be carried out through environmental counseling, cleanliness campaigns, and environmental education activities in the community.

The second strategy is to improve waste management facilities and infrastructure, such as the provision of adequate waste bins, waste processing facilities, and a more effective waste transportation system (Tarigan, 2026).

The third strategy is to strengthen community-based waste management programs, such as the development of waste banks, recycling activities, and community involvement in environmental management activities.

The fourth strategy is to strengthen cooperation between local governments, communities, and various related parties in an effort to maintain environmental cleanliness. Through this collaboration, it is hoped that waste management can be carried out more effectively and sustainably so that a clean and healthy environment is created in East Binjai District, Binjai City.

Based on the results of field observations, interviews with informants, and documentation studies, it is known that public green open spaces in East Binjai District are still limited both in terms of number and area. Some of the green open spaces available in this area are generally in the form of environmental parks, green paths along the main road, and open fields that are used by the community for sports and recreational activities.

In general, the condition of the existing public green open space shows that some facilities are available, such as sitting areas, walking paths, and vegetation in the form of shade trees and ornamental plants. However, the results of observations show that some facilities still need more optimal repair and maintenance. The vegetation conditions in some areas have also

not been optimally arranged, so the ecological function of green open spaces has not been fully achieved (Zannatun & Tarigan, 2025).

The existence of public green open spaces in urban areas is very important to maintain the balance of the ecosystem and improve the quality of the environment. This is in line with the opinion of Haq (2019) who states that green open space has an important role in improving air quality, lowering environmental temperature, and providing social space for urban communities.

Conclusion

Based on the results of the research on the Waste Management Strategy Based on Community Participation in Improving Environmental Cleanliness in East Binjai District, Binjai City, it can be concluded as follows:

The existing condition of waste management in East Binjai District, which is part of the Binjai City area, still faces several obstacles, especially in terms of limited waste management facilities and infrastructure and the non-optimal waste separation system from the source. This causes the accumulation of garbage to still be found at several points in the residential environment.

The level of community participation in waste management in East Binjai District is quite good, but it is still uneven throughout the region. Some communities have been involved in environmental cleanliness activities such as community service, waste sorting, and recyclable waste collection activities.

Factors that affect community participation in waste management include the level of public awareness and knowledge of the importance of maintaining environmental cleanliness, the availability of waste management facilities and infrastructure, as well as policy and program support from local governments through related agencies such as the Environment Agency.

Community-based waste management has an important role in improving environmental cleanliness, because through active community involvement various environmental problems such as waste accumulation and environmental pollution can be minimized.

The strategy of increasing waste management based on community participation can be carried out through increasing environmental education and socialization, providing adequate waste management facilities and infrastructure, strengthening waste bank and recycling programs, and increasing cooperation between local governments and communities in maintaining environmental cleanliness.

Suggestions

Based on the results of the research that has been conducted, some of the suggestions that can be given are as follows:

1. For the Binjai City Government, it is hoped that it can improve more effective waste management policies and programs through the provision of adequate waste management facilities and infrastructure and increased supervision of waste management in the community
2. For related agencies, especially the Environment Agency, it is hoped that it can increase socialization and education activities to the public about the importance of good waste management and encourage the development of community-based waste management programs such as waste banks
3. For the community, it is hoped that it can increase awareness and active participation in maintaining environmental cleanliness through household waste sorting activities, recycling activities, and involvement in environmental cleanliness activities in their respective residential areas
4. For the next researcher, it is recommended to conduct further research using different approaches, such as quantitative approaches or mixed methods, so as to provide a more

comprehensive picture of waste management and community participation in maintaining environmental cleanliness

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