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Implementation of Waste Management Policy in Achieving Public Health: A Case Study

[1]Sugianto Sugianto, [2]Musmuliadi Musmuliadi, [3]Aini Aini
[123]*Program Study of Public Administration, Postgraduate Program, Kutai Kartanegara University, Tenggarong, Indonesia*
Corresponding author: Sugianto

ABSTRACT

The objective of this study is to analyze the implementation of waste management policies as well as the factors that inhibit their implementation. This study used a qualitative research design with a descriptive approach. This study was conducted in Purwajaya Village, Loa Janan District, Kutai Kartanegara Regency, East Kalimantan Province, Indonesia. Data were collected using interview, observation, and documentation techniques. Interviews were conducted with key persons who were determined purposively. Data analysis used qualitative data analysis. The results of the study showed that the socialisation of waste management policies was not optimal, community participation in waste management was lacking, and infrastructure in waste management was still lacking There is currently insufficient infrastructure to support the reduce, reuse, and recycle principles and readily available facilities for waste processing. Both internal and external variables contribute to the challenges encountered when putting waste management strategies into practice. The public's ignorance of the significance of waste management is one example of an internal obstacle. The absence of technical recommendations as a follow-up to waste management laws based on the reduce, reuse, and recycle concept and the absence of infrastructure supporting waste management based on these principles are examples of external impediments.

KEYWORDS – Community participation**,** Infrastructure, Policy implementation, Public policy, Waste management

1. INTRODUCTION

An essential component of preserving public health is efficient waste management. Pollution of the air, water, and soil is one of the major environmental issues caused by the growing amount of garbage produced annually, especially from industrial and household sources. According to Law of the Republic of Indonesia Number 18 of 2008 about Waste Management, effective waste management seeks to enhance both the environment and human health. The government uses this strategy to guide each region in implementing sustainable waste management, which begins with waste reduction at the source and continues with management that involves the active involvement of the private sector and the community. Additionally, this rule highlights how crucial it is to lessen the detrimental effects that trash has on communities, particularly in places with poor access to sanitary facilities. Therefore, establishing a clean and healthy environment depends on effective waste management at the village level [1]. Through Regulation of the Minister of Environment and Forestry of the Republic of Indonesia Number P.70 of 2016 concerning Waste Management Guidelines, the government further reinforced waste management policies. The duty of local governments to create integrated waste management programs, which include recycling facilities and public awareness-raising education, is emphasised by this rule. However, there are still a number of challenges facing the implementation of this policy in many places, such as Purwajaya Village, Loa Janan District, Kutai Kartanegara Regency, East Kalimantan Province, Indonesia, including poor community engagement and a shortage of resources. According to Widjaja's research, community involvement in waste management can boost policy efficacy by as much as 40% in lowering the quantity of uncontrolled garbage [2]. The results of Pratama's study also show that a region's waste management program's performance is highly influenced by the degree of community involvement in garbage management. According to Pratama's research, villages with effective waste management have a high degree of public awareness and local government support for basic infrastructure like recycling facilities and trash cans [3].

Trash banks and eco-villages are examples of community-based local government initiatives that have been demonstrated to increase the efficacy of trash management in some places. Waste bank initiatives encourage communities to manage their own waste by enabling them to trade rubbish for cash rewards [4]. These kinds of programs serve as an example of how local policies can be created to enhance the economic standing of local communities while also reducing the amount of garbage generated. This study shows that community participation-based policies are more beneficial in the long run than those that only concentrate on law enforcement without providing thorough implementation assistance. The health and standard of living of the community are directly impacted by local waste management regulations that are effective. Effective programs can lower the danger of water source contamination, enhance air quality, and lessen the possibility of disease transmission from trash. As a result, waste management regulations that emphasise community cooperation are crucial to local government initiatives to establish a sustainable and healthy environment. Numerous obstacles prevent Indonesia's waste management policies from being implemented effectively, which reduces the efficacy of environmental management initiatives. The lack of funding and personnel to support the best waste management operations is one of the main challenges. A significant obstacle is not only a lack of resources but also a lack of public understanding of the significance of waste management. Despite the fact that Law of the Republic of Indonesia Number 18 of 2008 concerning garbage Management highlights the importance of community involvement in household garbage management, its execution has not been ideal. There are still some people who are unaware of the harm that littering causes to the environment and human health. Public health is greatly impacted by efficient waste management, particularly in rural regions like Purwajaya Village. When waste heaps are not properly managed, they can pollute the environment by contaminating the land, water, and air through burning. According to research, waste-polluted settings are more likely to experience a number of infectious ailments, including skin conditions brought on by contaminated wastewater and respiratory infections brought on by air pollution [5]. In order to reduce the detrimental effects of garbage on health, the government is required to prioritise holistic management principles, as stated in Law of the Republic of Indonesia Number 18 of 2008 concerning garbage Management. In Purwajaya Village, where waste management facilities are still scarce and people frequently dispose of their rubbish outdoors, this is especially pertinent. With greater community involvement and business sector cooperation, there is a lot of promise in creating a sustainable waste management system. The awareness and participation of the community is crucial to the success of waste management programs in many places. Initiatives like household composting and garbage banks have shown promise in lowering waste consumption and boosting local economies. Residents are further encouraged to sort and manage their own waste via waste bank schemes that enable them to trade their collected non-organic waste for cash rewards. The waste management system can also be strengthened by working with the business sector, for example, by investing in infrastructure or implementing CSR initiatives that promote environmental cleanliness education [6]. Furthermore, this study aims to analyze the implementation of waste management policies and to analyze the factors inhibiting the implementation of waste management policies.

2. LITERATURE REVIEW

1. Public Policy

A set of choices or measures made by the government to address social, economic, and environmental issues that society faces is known as public policy. When it comes to waste management, public policy seeks to establish an efficient system that lessens garbage's negative effects on the environment and public health in addition to reducing its volume. The four primary steps of a policy cycle model—problem identification, policy design, implementation, and evaluation—can be used to analyse public policy. This approach makes it possible to pinpoint the difficulties that arise at every turn and gauge how well the policy accomplishes its stated objectives, including waste management at the village level. Waste management problems at the village level are usually associated with low public knowledge, insufficient waste management infrastructure, and high waste generation, according to the problem identification stage. Designing suitable policies to handle waste concerns in the community requires a thorough and precise identification of the problems. Village governments must create thorough policies at this level, based on precise data about trash production and its effects on public health. These regulations ought to incorporate community engagement tactics, enhance waste collection infrastructure, and implement eco-friendly waste processing technology. Waste management problems at the village level are usually associated with low public knowledge, insufficient waste management infrastructure, and high waste generation, according to the problem identification stage. Designing suitable policies to handle waste concerns in the community requires a thorough and precise identification of the problems [7]. Village governments must create thorough policies based on precise facts on trash generation and its effects on public health during the policy-making phase. These regulations ought to incorporate community engagement strategies, enhance waste collection infrastructure, and implement eco-friendly waste processing technology. Implementing policies comes after they have been formulated.

In order to guarantee that developed policies can be carried out successfully and have the intended effect, policy implementation is an essential step. The success of policy implementation is influenced by several aspects. The capability of local governments, the availability of resources, supporting infrastructure, and the degree of public understanding and support for the policy are some of the key elements affecting how well policies are implemented. In addition to fulfilling the numerous administrative, financial, and technological requirements required to guarantee the policy's successful execution on the ground, good implementation necessitates efficient cooperation between the community and the government [8]. Village level waste management policy implementation frequently encounters obstacles such a lack of supporting facilities, poor community involvement, and scarce resources. Coordination between communities, the private sector, and village governments is essential to the successful implementation of policies. It is difficult to accomplish intended public health goals when waste management programs lack significant synergy. Thus, strengthening village authorities' abilities and boosting community involvement in waste management initiatives are important factors that need to be considered when putting this strategy into practice. One of the most important aspects of putting waste management policy into practice is having enough resources. These resources consist of both adequate financial resources and skilled human capital for efficient waste management. To support waste management operations, local governments must make sure that enough funding is available for things like waste management officer training, equipment purchases, and infrastructure upgrades. Waste management regulations won't be implemented successfully without sufficient resource support, which could have an influence on public health and environmental cleanliness [9]. For a policy to be implemented successfully, resources must be available. According to research by Wachid & Caesar, the lack of available waste processing equipment, a lack of garbage trucks, a lack of waste management staff, and a lack of land prevented the implementation of Regional Regulation No. 4 of 2017 concerning Waste Management in Kudus Regency [10]. According to the study's findings, there has been a rise in household waste management initiatives and public understanding of the value of sorting, reducing, and recycling. The community has been inspired to actively engage in waste management and contribute to the solution of the trash problem by the policies that have been put in place. The study's findings indicating that the implementation has not been successful or at its best were examined by Komarudin et al., Adnyana et al., Iqbal et al., Mahendra et al., Soeharsono et al., Wijaya et al., Astuti & Kamil, Arlan, Sakir [11-19]. While other studies stated that waste management has run well as the results of research by Noviyanti et al., Arkum et al, Yudianto, Dwijayanti & Arif, Supriatna [20-24]. There are regional variations in the way waste management rules are implemented. There have been some well-executed yet subpar policies. Likewise, similar regulations have not been successfully implemented in the majority of regions. This suggests that waste is still a significant problem for health and cleanliness.

2. Waste management

In order to lessen adverse effects on the environment and human health, waste management is an essential part of environmental policy. Effective waste management entails a number of processes, including ecologically responsible collection, transportation, processing, and disposal. This strategy seeks to reduce the harmful effects of poorly managed waste, which can endanger human health and contaminate the environment. Government Regulation Number 81 of 2012 concerning the Management of Household Waste and Waste Similar to Household Waste and Law of the Republic of Indonesia Number 18 of 2008 concerning Waste Management govern waste management in Indonesia. Trash management, according to this law, is a methodical, all-encompassing, and ongoing activity that involves handling and reducing trash. Reducing waste involves minimising waste production, recycling waste, and reusing waste. The 3R principle (Reduce, Reuse, Recycle) is a common term used to describe this trash management. The 3R approach (Reduce, Reuse, Recycle) is frequently used as a foundation for governments and communities to execute waste management regulations in a more effective and efficient manner. Reducing the amount of waste generated, recycling rubbish into valuable goods, and reusing items that are still usable are the main goals of the 3R approach. The use of this model not only results in more efficient waste management but also contributes to reducing the waste load in final disposal sites (*TPA*). The implementation of a 3R-based waste management policy (Reduce, Reuse, Recycle) aims to transform waste into a resource while preserving environmental functions and public health [25]. The 3R model's application can greatly lower the quantity of waste dumped in landfills and raise awareness of proper waste management practices. According to the findings of a study by Epriant et al. waste management through the application of the 3R yields efficient and successful outcomes [26]

One of the primary advantages of using the 3R method to domestic waste management is the reduction of waste. By lowering the quantity of waste produced, the 3R model can lessen the strain on municipal waste management systems. Additionally, communities can lessen the demand for new products and conserve natural resources used to create new ones by reusing usable objects. Additionally, the 3R principle can aid in lowering pollution levels in the environment [27]. Another good way to increase the effectiveness of waste management regulations at the

village level is through community-based trash management. Involving the community in all phases of waste management from collection to processing and disposal is essential to this strategy. According to Zatilah's research waste management was subpar [25].

3. Community Participation

For waste management strategies at the village level to be successful, active community involvement in waste management is essential. The direct participation of the community in promoting a policy is just as important to its success as official action. Participation in waste management by the community includes lowering the quantity of waste produced as well as taking part in waste collection, sorting, and recycling. Building public awareness and comprehension of the significance of environmental cleanliness and the detrimental effects of trash on health is therefore essential to achieving successful waste management [28]. In order to increase public knowledge of waste problems and their detrimental effects on health, environmental education is essential. Active community involvement in environmental cleanliness can be increased through waste management education. Waste's detrimental effects on health can be lessened by following the 3R principle (Reduce, Reuse, Recycle), sorting waste, and using less plastic. It has been demonstrated that these environmental education initiatives in a number of villages lower the amount of waste dumped in landfills and lower levels of harmful pollutants [29].

Residents of the area must cooperate to solve the waste management issue; neither the government nor any one party can do it alone. trash management, according to Wardi, is a methodical, continuous procedure that involves both trash handling and reduction. Therefore, waste management necessitates citizen participation in addition to government duty. Communities can collect, sort, and store waste that is still economically viable with the aid of waste banks [30]. Similar to this, Sekarningrum et al. assert that the foundation for community involvement in waste management is locals who have lived in the area for a considerable amount of time, own their own homes, have a good level of education, and have wives who are not employed [31].

Through garbage banks, the government has promoted waste management in local areas. While some waste management initiatives using waste banks have been successful, others have not been. garbage banks have been used to encourage community involvement in garbage management in a number of locations, but a number of challenges have prevented their full potential [32]. The government has tried to get more people involved in garbage management. Nevertheless, increasing community involvement in trash management has proven difficult in many areas. According to study by Raudah et al., the active role of the community has not been fully implemented or carried out by the community in waste management because of a lack of public awareness, demonstrating the poor quality of research on community participation [33]. Similarly, Nabila et al. found that community involvement in trash management is still minimal in Pampanan Village, Pugaan District, Tabalong Regency. Contributions of concepts and materials, preservation of the environment, use of sorted garbage, and criticism all demonstrate this [34]. According to other research findings, policies that have been put into place have promoted active public involvement in garbage management. Notwithstanding these encouraging developments, problems still need to be resolved [11].

3. METHODOLOGY

This research design uses a qualitative research design with a descriptive approach. A qualitative research design allows researchers to explore problems in a more contextual and in-depth manner, which is very appropriate for the research objectives [35]. Purwajaya Village, Loa Janan District, Kutai Kartanegara Regency, East Kalimantan Province, Indonesia, is where this study was carried out. The significance of waste management as a critical environmental concern in attempts to preserve local public health led to the selection of the site. Because of the continuous waste management program and the difficulties the community and authorities confront in putting waste management policies into practice, Purwajaya Village was selected as a case study. The study took place between January and June of 2025. Interviews, observation, and documentation methods were used to gather data. Key persons that were purposefully chosen were interviewed.

Using qualitative data analysis for data analysis. Organising data into categories, breaking it down into units, synthesising it, arranging it into patterns, selecting what is significant and will be studied, and drawing conclusions that are simple for oneself and others to understand are all steps in the process of methodically compiling data from field notes, interviews, and documentation. In qualitative research, data analysis is done before going into the field, during the field, and after the fieldwork is complete. The following activities in qualitative data analysis are based on the viewpoint of Miles and Huberman, which Sugiyono [36], quotes:

a) Data reduction, which entails condensing information, picking out the most crucial details, concentrating on those details, and searching for trends and themes.
b) Data display, which uses narrative writing to present data.

c) Drawing conclusions and confirming the results of qualitative research are the tasks of conclusion drawing and verification.

Figure 1 displays the data analysis tasks listed below.

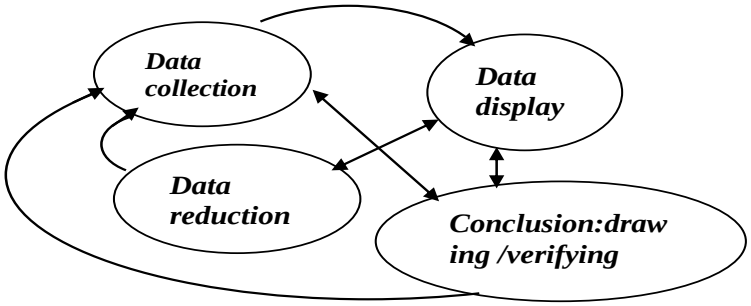

Figure 1 Components in Data Analysis
Source: Sugiyono (36)

4. RESULTS AND DISCUSSION

a. Implementation of Waste Management Policy

A policy's implementation success depends on a number of factors, including institutional, group, and individual factors. A principle or course of action selected to direct decision-making is called a policy [37]. Law Number 18 of 2008 concerning trash Management and Government Regulation Number 81 of 2012 serve as the guidelines for the trash management policy in Purwajaya Village, Loa Janan District, Kutai Kartanegara Regency. Legal certainty and clarity of the government's, local government's, and business community's responsibilities and authorities are necessary for proportionate, effective, and efficient waste management. According to the regulations, the 3R principle (Reduce, Reuse, Recycle) which limits waste generation, recycles waste, and reuses waste is the waste management approach used in this hamlet. Aspects like socialisation, facilities, and community participation will be used to analyse how the waste management policy is being implemented.

a. Socialization of waste management policies

A waste management program must be put into place in order to create a healthy environment and to eventually make money from recycling garbage. The head of East Kalimantan Province's Kutai Kartanegara Environment and Forestry Service has distributed this policy. The following assertion is provided based on key person interviews:

> "The Kutai Kartanegara Regency's waste management policy, which applies to Purwajaya Village as well, is a component of the government's initiatives to establish a hygienic and safe environment. Our key objectives in implementing this strategy since 2020 have been to maintain environmental cleanliness and enhance public health". (Key Person Number 1 Interview, May 10, 2025).

According to the study's findings, the government has implemented a number of laws, such as those pertaining to garbage sorting, collection, and processing, in an effort to preserve environmental cleanliness and enhance public health since 2020. This illustrates how dedicated local governments are to dealing with waste, one of the most important environmental problems. Although waste management policies have been disseminated, the outcomes have not been ideal. The important informant interviews that follow make this clear.

> "We observe that despite outreach efforts, there remains a disconnect between awareness and action. Increasing community engagement is a challenge for us (May 2, 2025, interview with key person number 2). And he added... "Despite our numerous outreach initiatives, a large number of locals continue to trash. "We must come up with more efficient methods to increase their awareness," he stated. (May 16, 2025, interview with key person number 2).

The study's findings suggest that socialisation has been used in the implementation of waste management programs, however the outcomes have not been ideal. The current waste management services are unsatisfactory as a result of this inadequate socialisation. Leaders in the community said they hoped the government would do more to educate and engage the public about the value of sorting rubbish. Information on good waste management that is consistent and easy to understand is also required.

Ongoing socialisation can help waste management policies better accomplish their goals. This study also demonstrates how socialisation can promote trust between stakeholders and the government in addition to enhancing understanding. In the end, this will help ensure that the policy is implemented successfully. According to research by Arkum et al., the Pangkal Pinang Environmental Agency (DLH) directly socialised the community about waste management policies. The outcomes of this study are consistent with those findings. *DLH* used

billboards on the streets to socialise not just the community but also other stakeholders, including sub-districts, government agencies, the commercial sector, Adiwiyata schools, and other institutions [21]. The findings of this study, however, are different from those of Wachid & Caesar's study, which examined the policy implementation of waste management in Kudus Regency and found that the Kudus Regency Government had not implemented the socialisation activities for Regional Regulation No. 4 of 2017 regarding waste management [10].

b. Facilities for waste management

Effective waste management requires sufficient infrastructure, including recycling centres, garbage collecting locations, and ecologically friendly landfills. To achieve the objective of waste management towards a healthy environment, it is essential to construct and maintain these physical resources. According to interviews with important players, the Purwajaya Village Government has attempted to enforce this regulation in a number of ways, including by supplying trash cans, but these attempts have not always been successful. The findings of the interview are shown below.

> "Trash cans that we have given are frequently full and unmaintained. In order to solve this issue, we look for increased government suppor”t. (May 17, 2025, interview with key person number 4).

The insufficient waste management infrastructure in the village was also mentioned. According to the key informant interviewed below.

> "We know there are trash bins, but we often see them full, and no one empties them." (May 18, 2025, interview with key person number 5).

Purwajaya Village, Loa Janan District, Kutai Kartanegara Regency, East Kalimantan Province, has not adopted waste management based on the 3R concept, according to the study's findings. The new waste management system can only gather, transport, and dispose of waste from each family in a landfill, according to the findings of the researcher's observations. As a result, waste management does not follow the 3R principle and does not distinguish between plastic and organic trash, particularly when it comes to waste utilisation stages like composting. In order for trash management using the 3R concept to function effectively, infrastructure support is essential. The community is constantly hoping for the realisation of good infrastructure. The community's desire to attain the objective of leading a healthy life is inextricably linked to this. All stakeholders' participation is therefore crucial and long-lasting. The results of Dwijayanti & Arif's study on the use of waste management in final processing are consistent with the findings of this study about the absence of infrastructure. According to their research, the Gresik Regency government's waste management has been less successful as a result of the Ngipik Landfill's lack of infrastructure and waste management facilities [23]. This study also supports the findings of Sakir's investigation, which found that garbage collection trucks and other supporting infrastructure are still insufficient to manage the amount of waste generated daily [19]. The research findings are different from those of Noviyanti et al., who looked at how the Surabaya Main Waste Bank Program was used to implement waste management policies. They said that Ngagelrejo Village has enough physical resources to carry out the waste management policy [20].

c. Community participation in waste management

Being physically there is only one aspect of participation; other elements include active engagement and personal dedication to improving waste management. Participation is an expression of engagement with waste management initiatives that promote goal attainment and hold participants accountable for their participation. To put it another way, participation is a multifaceted process that includes both individual awareness and group decision-making. It is crucial to recognise that a variety of issues might affect the Purwajaya Village population in Loa Janan District, Kutai Kartanegara Regency, and how they participate in trash management. Environmental awareness in the community is a crucial element. Individuals are more inclined to take part in initiatives that lessen the use of single-use plastics if they are aware of the negative consequences of plastic trash. In this case, education might act as a motivator by improving an individual's perceptions and comprehension of the surroundings. Family involvement and awareness have a big impact on effective trash management. Families are more likely to keep their homes clean if they get education and participate in outreach or training initiatives. However, their participation may be hampered by socioeconomic constraints, hectic schedules, and a lack of infrastructure support from the local community or government.

According to the study's findings, there is still a lack of community involvement in waste management in Purwajaya Village, Loa Janan District, Kutai Kartanegara Regency. The following interviews with key person demonstrate this low degree of community involvement.

> "We wish to actively engage the community in garbage management. We might be able to raise their awareness of environmental responsibility by incorporating children in activities like gotong royong, or mutual collaboration, he said”. (Key Person 2 interview, May 17, 2025).

This opinion was repeated by another key person, who said that more people need to participate in the waste sorting program. The interview that follows has more information.

> "We have discussed this matter in a number of meetings, but the outcomes have not been ideal. He stated that the community must have a sense of accountability for their surroundings". (Key Person 3 interview, May 17, 2025).

People can participate in waste management directly by sorting rubbish, taking part in recycling initiatives, or supporting environmental awareness campaigns. In addition to aiding in waste management, actively participating in these activities teaches kids the value of their actions. A generation that is more environmentally sensitive is produced, for instance, when children are taught to sort rubbish at home. This creates positive habits that will endure into adulthood. Systems of support are required to boost involvement. Examples of this include government and non-governmental groups' support, easily accessible waste management facilities, and clear policies. Purwajaya Village, for instance, should place distinct trash cans for organic and non-organic waste on each street corner to encourage community members to get involved in waste management. Strong infrastructure is therefore essential to boosting community involvement. Involving the community in waste management can involve a variety of activities, such as selecting the type of waste to be reduced and managed, figuring out opportunities and problems in their surroundings, deciding on potential solutions to problems, addressing issues, and taking part in assessments. The results of this study are consistent with those of a study conducted in Pampapan Village, Pugaan District, Tabalong Regency, by Nabila et al., which looked at community involvement in trash management. Their study's findings demonstrated the low level of community involvement in trash management in Pampanan Village, Pugaan District, Tabalong Regency [34].

b. Obstacles in the Management of Waste

In Purwajaya Village, Loa Janan District, Kutai Kartanegara Regency, East Kalimantan Province, waste management according to the 3R principle has not been put into practice. Similarly, there are still a number of challenges with more straightforward waste management, when waste is just gathered in the designated trash cans. This hamlet has not been implementing waste management as required by Law Number 18 of 2008 and Government Regulation Number 81 of 2012 concerning Waste Management to the best of its abilities. The 3R principle of trash management has not been applied correctly in this rule. There are a number of reasons behind this. Waste management is hampered by both internal and external forces. The lack of awareness and comprehension of the significance of waste management is an internal problem in society. Many people might think that their little deeds won't make a big difference. Promotions that highlight how even the smallest action can result in bigger impact are therefore essential. Consequently, the 3R principle (Reduce, Reuse, Recycle) must be used to raise public awareness of the significance of trash management. It's possible that many people are unaware of how these ideas can lessen the environmental impact of waste. Public education regarding the advantages and application of the 3R is therefore essential. The people must be given enough information to enable them to alter their behaviour. The absence of public involvement is another barrier. Even though trash management is becoming more well known, not all locals actively engage in the initiatives that are currently in place.

The absence of regional rules as technical guides, in accordance with Law Number 18 of 2008 and Government Regulation Number 81 of 2012 concerning trash Management, is the external barrier to trash management in this community. As a result, the government hasn't yet created any supporting materials for 3R-based trash management. The absence of infrastructure is another barrier. The second task is to build infrastructure that supports the 3Rs. This entails constructing sufficient recycling facilities, effective collecting systems, and cutting-edge trash processing facilities. The execution of the 3R principles may be hampered in certain communities due to easy access to this infrastructure. Despite government initiatives to improve garbage disposal facilities, observations showed that a lack of accessibility and low public knowledge had caused many residents to litter. Only half of the garbage produced in Purwajaya Village is appropriately managed, according to data collected by researchers from the Kutai Kartanegara Regency Environment and Forestry Service. Therefore, to guarantee that this strategy is applied more successfully, upgrades to waste management facilities and infrastructure are required.

5. CONCLUSION

The following waste management policies are being implemented in Purwajaya Village, Loa Janan District, Kutai Kartanegara Regency, East Kalimantan Province, according to the findings of the research and discussion that have been conducted:

1) It hasn't been the best in terms of policy socialisation. A vital first step in making sure the general public comprehends the need of appropriate waste management is effective socialisation. Furthermore, the public has

not been sufficiently educated via the socialisation process about the significance of sorting waste types and minimising the use of plastic.

2) There is a lack of community participation as measured by the participation factor. A major issue is the lack of community involvement. The result of a lack of knowledge about sustainable environmental practices and healthy living is a lack of community involvement. Most locals still view garbage as an issue that doesn't require serious attention, therefore they frequently dispose of it carelessly without taking the environment's and their health's effects into account.
3) In terms of infrastructure, this village still lacks adequate waste management facilities. The absence of suitable infrastructure is one of the primary challenges in Purwajaya Village's waste management. This infrastructure consists of facilities that support the 3R principle (reduction, utilisation, and processing), appropriate waste disposal locations, and conveniently located waste processing facilities. Without enough infrastructure, the community cannot adopt sustainable waste management norms. For instance, when there aren't enough garbage cans in public areas, people often litter. This demonstrates that infrastructure development needs to be given high priority in order to manage waste more effectively.

Both internal and external variables contribute to the challenges encountered when putting waste management strategies into practice. The public's ignorance of the significance of waste management is one example of an internal obstacle. Waste is still seen by many as a trivial problem that doesn't need to be addressed. The risks that trash accumulation poses to the environment and human health are not well known to the public. Waste that is not properly disposed of can contaminate land and water, which can ultimately harm public health. The absence of technical instructions as a follow-up to waste management laws based on the 3R concept is one example of an external barrier. One major obstacle to the waste management regulation, which is based on the 3R concept (Reduce, Reuse, Recycle), is the general lack of understanding of technical recommendations Even if laws are approved, policies will be mostly ineffectual if they are not well understood and implemented. If people don't know enough about recycling waste, they could find it difficult to incorporate the 3Rs into their daily life. Therefore, it is essential to develop outreach initiatives that give specific examples of how individuals may help improve waste management in addition to explaining the legislation. The absence of infrastructure for 3R-based waste management is another barrier. There are insufficient waste management facilities in Purwajaya Village, including distinct recycling collecting locations. It will be difficult for communities to apply the 3R principle in their day-to-day activities without proper infrastructure. Residents sometimes mix all trash kinds in the absence of distinct containers for organic and non-organic waste, which makes recycling more difficult. As a result, building infrastructure that facilitates sustainable waste management requires a large investment.

Recommendations that can be taken to improve waste management in Purwajaya Village, Loa Janan District, Kutai Kartanegara Regency, East Kalimantan Province, include:

1) Keep up outreach initiatives and actively involve the community, including expanding your reach through social media and digital channels.
2) Encourage more community involvement. To raise public knowledge and involvement in trash management, for instance, by organising community service projects or cleaning contests.
3) Development of Infrastructure. Local governments must set up enough funds to construct suitable waste management infrastructure, including distinct locations for disposing of waste.
4) Ongoing Education. Continually educate the public on the value of waste management and its effects on the environment and human health.
5) Working together with outside parties. Work together with non-governmental and private organisations to construct waste processing facilities that adhere to the 3Rs.

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