



Evaluation of Implementing Community-Based Waste Management Policies in Semi-Urban Areas

Ismawati Septiningsih¹, Itok Dwi Kurniawan^{1,*}, Muhammad Hendri Nuryadi², Wahyu

Noviansyah², Fitri Handayani¹, Jose Gama Santos³

¹Faculty of Law, Universitas Sebelas Maret, Indonesia

²Faculty of Teacher Training and Education, Universitas Sebelas Maret, Indonesia

³Faculty of Law, Universidade da Paz, Timor Leste

ARTICLE INFO

Article History:

Received: 23 June 2026

Accepted: 30 August 2026

Published: 25 September 2026

Keywords:

Effectiveness;

Community participation;

Waste management.

*Corresponding Author:

itokdwikurniawan@staff.uns.ac.id

ABSTRACT

Waste management in semi-urban areas faces serious challenges, including increasing waste accumulation. Meanwhile, low community participation in supporting government programs poses a significant obstacle. Waste management laws and presidential regulations emphasize the importance of community-based waste management. This study aims to analyze the normative effectiveness of community-based waste management policies and formulate strategies to enhance their effectiveness in semi-urban areas. This study used a normative legal methodology and a descriptive-analytical approach through a literature review, applying Van Meter and Van Horn's policy implementation model. The results show that community-based waste management policies have been implemented, but their effectiveness varies across implementation indicators. In these waste management policies, the community should be the primary element treated as the subject, not merely the object, of the policy. Therefore, in efforts to improve the effectiveness of community-based waste management policies, policy communication and public education play a key role. This study concludes that improving the effectiveness of waste management policies requires resource support, support from relevant institutions, capacity building for local governments, and collaboration among stakeholders.

To cite this article:

Septiningsih, I., Kurniawan, I. D., Nuryadi, M. H., Noviansyah, W., Handayani, F., & Santos, J. G. (2026). Evaluation of implementing community-based waste management policies in semi-urban areas. *Bulletin of Social Studies and Community Development*, 5(3), 396-410. doi: <https://doi.org/10.61436/bsscd/v5i3.pp396-410>

This is an open access article under the CC BY SA licence (<https://creativecommons.org/licenses/by-sa/4.0>).

■ INTRODUCTION

The problem of increasing waste remains a challenge with no clear solution. Mounting waste is the responsibility of humans who carry out daily activities and produce household, industrial, and commercial waste. Data from the National Waste Management Information System (SIPSN) indicates that in 2023, Indonesia will generate 56.63 million tons of waste. Of this total, only about 39.01 percent, or 22.09 million tons, can be managed properly. Meanwhile, most of the remaining waste still ends up in landfills through open dumping systems, which can pollute the environment and do not meet sustainable waste management standards (Lingkungan et al., 2025).

As long as humans live, waste production will be inevitable. As consumption patterns and modern lifestyles increase, waste volume tends to rise significantly every year (Suryani, 2014). Waste management issues have become a

serious problem not only in large cities with high population mobility but also in developing regions. Therefore, public awareness and active participation in waste management are key factors in creating a clean and sustainable environment.

Active community participation plays an important role in reducing household waste and can even cut it by around 70 percent. However, public awareness and understanding of the importance of good waste management remain relatively low (Nurjamiludin et al., 2024). Many people still do not understand the long-term impact of poor waste management on the environment and health. However, the biggest challenge lies in the community's mindset and behavior, which still views waste as a trivial issue that does not need to be processed or recycled.

Waste management depends heavily on the community's role in managing it. This view

aligns with structural functionalism, as proposed by Émile Durkheim, which emphasizes community involvement as a key element in maintaining social balance and order (Nurfadhillah & Rahmawati, 2024). From a functionalist perspective, each layer of society has its own functions and roles that support one another for social sustainability. Although the government, non-governmental organizations (NGOs), and community-based organizations (CBOs) contribute to waste management, their roles are more supportive in nature and strengthen a program's success. Functionalism theory also emphasizes the importance of social norms in maintaining social cohesion (Nurfadhillah & Rahmawati, 2024). In waste management, norms governing waste sorting, recycling, and processing are important tools for shaping more environmentally responsible community behavior.

Given the growing urgency of waste management, the government enacted Law No. 18 of 2008 on Waste Management as the legal basis for addressing this issue. Under this regulation, every individual must manage waste responsibly and with an environmentally conscious approach. Environmentally conscious waste management is defined as a series of efforts that consider negative impacts on ecosystems and public health while also focusing on conserving natural resources for future sustainability.

Waste management aims to create a healthy, clean, economically optimal environment and encourage community participation in reducing waste. In addition, the law obliges local governments to develop regional waste-management regulations aligned with national goals. Through this step, the government reflects concern for environmental problems and implements preventive efforts to minimize waste at the source.

To support this policy, one important household-level activity is waste sorting. This stage is a crucial initial element that determines the effectiveness of the subsequent waste management system. Sorting at the source, such as households, has proven more efficient because waste types, especially inorganic waste, remain separate and uncontaminated. Homogeneous waste composition facilitates recycling collection and maintains material quality for reuse. Ultimately, this sorting also reduces the volume of waste transported to the final disposal site (TPA), extending the TPA's lifespan and supporting sustainable waste management (Ambina, 2019).

Although waste management policies have promoted community participation through various programs, their

implementation effectiveness in semi-urban areas still requires further evaluation. Semi-urban areas are transitional areas between villages and cities, combining the hustle and bustle of urban life with the tranquility of rural life. The socio-economic characteristics of these areas are heterogeneous, combining modern individualistic elements with collective community traditions. These conditions often create conflicts in mindsets and habits, resulting in suboptimal community participation in waste management.

In contrast, many local government programs in every village or hamlet promote sustainable waste management. Numerous waste banks have been established in every village, supported by public education at the start of the program and the obligation to collect and recycle waste. However, in reality, the community tends to be indifferent and finds it difficult to implement the program. In some cases, waste is even discarded and collected for burning. This situation has created new problems, namely air pollution and disturbance to the surrounding area. The village government's program will ultimately be hampered because residents' resistance is the main problem, and it is difficult to change their behavior to be more concerned about the surrounding environment (Nasution, 2025).

In semi-urban areas, the environmental crisis is a key issue. Although environmental and waste management policies have been directed toward community participation, their effectiveness remains questionable in practice. In many areas that are administratively or socially categorized as "semi-urban", it appears that large cities are competing to project a "green" environmental image as a marketing strategy to attract investment (Febrian, 2025). However, this image is often only symbolic and does not reflect the actual conditions on the ground. In reality, environmental burdens are unevenly distributed, and areas that still hold traditional values are often not prioritized in environmental planning, waste management, and the provision of waste control facilities.

This condition aligns with research on peri-urban phenomena, which shows that areas in urban-rural continuity face pressures from land-use change, increased population mobility, and socio-cultural fragmentation (Christiawan & Nguyen, 2024). As a result, community participation in environmental management (including waste management) has not been optimal, because semi-urban communities are often caught between two models of modernity: individualistic modernity and collective traditionalism. Furthermore, government and local institutions have not yet adapted to this

dual character.

Semi-urban areas have unique characteristics because they are transitional zones between rural and urban areas. These areas combine industrial and agricultural jobs. As a result, the community's mindset and perspective are diverse, especially regarding waste management. It cannot be generalized that this area is already aware of the importance of sustainable waste management because, in essence, many people are individualistic. Therefore, it is important to shape a more adaptive mindset in the community and raise awareness of the impact of waste on the surrounding environment.

Based on the above description, it is important to evaluate community-based management policies, particularly the extent to which these policies can encourage community participation as a key element of waste management. This is because waste management policies must be supported by the involvement of various stakeholders, including the community, the private sector, and other actors such as nongovernmental organizations or other environmental groups. This study has two research questions:

1. How is the normative effectiveness of community-based waste management policies in encouraging community participation?
2. What is the strategy to increase the effectiveness of community-based waste management programs?

■ METHOD

Research Approach

This research is normative legal research with a descriptive-analytical approach. Normative research examines norms, principles, and legal provisions related to community-based waste management (Marzuki, 2025). The approach used is a statutory approach to review regulations related to waste management in Indonesia, as well as a conceptual approach to understand the concept of community-based waste management. To analyze the implementation of waste management policies, the study used the Van Meter and Van Horn models regarding factors that affect policy implementation as a supporting analytical framework. These models remain within the framework of normative legal research and are not intended to turn legal research into empirical research.

Source of Legal Materials/Data

This research used two sources of legal materials, namely primary legal materials derived from laws and regulations, namely Law

No. 18 of 2008 concerning Waste Management, and secondary legal materials derived from scientific publications, journal articles, and e-books obtained online.

Data Collection Techniques

This study used a literature review to collect, review, and analyze secondary data as the basis for the research (Benuf & Azhar, 2020). Secondary data were obtained from existing literature such as journal articles, websites, and general articles related to community-based waste management

Data Analysis

Based on Ariawan (2013), descriptive analysis can be carried out using evaluative, interpretive, systematic, constructive, and argumentative techniques. This study used a descriptive-analytical method with an evaluative approach. Descriptive analysis describes and interprets the positive legal norms, concepts, and legal problems studied, then systematically links them to develop legal arguments (Taekema, 2021). In this study, the legal materials identified through the literature review were assessed for their relevance to community-based waste management in semi-urban areas. Then, the legal materials were evaluated using six indicators of the Van Meter and Van Horn policy implementation models as an analytical framework. The Van Meter policy implementation model in this case is not used as a data collection instrument or for empirical data coding but is limited to a conceptual framework to read and evaluate waste management policies, as previously researched with the analytical framework of the Van Meter and Van Horn policy models in understanding the success or obstacles of implementation (Parassa et al., 2025).

The six Van Meter and Van Horn indicators are operationalized normatively by conducting a positive legal search in Indonesia for each indicator, rather than measuring findings in the field. i) Policy standards and targets are read from the formulation of quantitative objectives and targets in legislation; ii) Resources and iii) characteristics of implementing bodies are read from norms that regulate authority, financing, and implementing institutions; iv) interorganizational communication is read from norms that contain coordination and reporting between governments; v) implementing dispositions and vi) social, economic, and political conditions are read from norms that regulate incentives, sanctions, and space for community participation.

■ RESULTS AND DISCUSSION

Implementation of Community-Based Waste Management Policy

Waste management in Indonesia and related regulations

In general, waste management encompasses activities such as controlling waste generation, collection, transportation, processing, and final disposal. Under Law Number 18 of 2008 concerning Waste Management and its implementing regulation, Government Regulation Number 81 of 2012, household waste and similar types of waste are managed in an integrated and sustainable manner. In this context, the waste management paradigm needs to shift from simply disposing of waste to managing it. This means that the community is encouraged to play an active role in every stage of management through the application of the 3R principle (reduce, reuse, recycle), so that waste management is not only oriented towards environmental cleanliness, but also towards community empowerment and increasing the economic value of the waste itself (Rahmanita Fauzia & Arieffiani, 2020).

In Indonesia, one tangible form of community participation in waste management is the establishment of waste banks, which collect, sort, and use economically valuable waste in an organized manner. Waste banks are an innovation in Indonesia's waste management system based on the 3R principle (reduce, reuse, recycle). Based on the Regulation of the Minister of Environment of the Republic of Indonesia Number 13 of 2012 concerning Guidelines for the Implementation of Reduce, Reuse, and Recycle through Waste Banks, Article 1 paragraph (1) explains that a waste bank is a place to sort and collect waste that still has value or economic value, either for recycling or reuse.

Through this concept, the community is encouraged not only to dispose of waste, but also to reduce, reuse, and process waste into something useful and economically valuable. In practice, waste banks have three main interrelated functions (Yuliana & Wijayanti, 2019). First, the social function where the Waste Bank becomes a means of interaction and collaboration among residents in building collective awareness of the importance of cleanliness and environmental sustainability. Activities at the Waste Bank create a participatory space that strengthens belonging, builds social relationships, and fosters shared responsibility for protecting the environment. Second, the economic function increases the value of waste previously considered useless. The segregated waste savings and sales system benefits the community economically by

increasing people's income and creating new business opportunities when waste is properly recycled. Therefore, waste banks affect not only the environment but also the community's economic empowerment. Third, the environmental function is reducing the volume of waste in landfills. Through sorting and recycling in the waste bank, it extends the life cycle of materials and reduces waste accumulation. Overall, the waste bank takes a holistic approach to waste management by combining social, economic, and ecological aspects.

Operationally, the waste bank system runs through several stages, starting with household-level waste sorting, depositing at the waste bank, weighing and recording deposits, and transporting collected waste for recycling or sale to recycling managers. Currently, various new ideas and models for more digital waste banks include prototypes and websites. These new waste bank models have a more structured flow than conventional waste banks. Their emergence is driven by the reality that waste banks in various areas, from rural to semi-urban, do not distribute waste for recycling optimally. The prototype mechanism introduces a more functional distribution system by displaying waste-sale requests on middlemen's dashboards. This means that waste does not just pile up at the waste bank but is systematically and quickly connected directly to the middlemen (Yunita et al., 2021). In waste bank operations, community participation is an important supporting factor. Community participation is the active involvement of residents in efforts to solve various problems that arise in their environment. This participation can take various forms, including involvement in decision-making, implementation of activities, use of program results, and evaluation to assess the effectiveness and sustainability of the activities carried out (Astoria & Heruman, 2016).

The influence of community participation in waste management

Various factors influence community participation in implementing a program, including education level, income level, knowledge, perception, and family support (Kusumaningrum & Azinar, 2018). A person's knowledge and attitude play an important role in shaping their thinking and determining their actions, including in waste management. The community's education level also influences their perspective and awareness of actively participating in waste management activities, such as waste bank programs. In addition, employment factors also determine the level of

community participation. Generally, the more stable and time-consuming a person's job is, the less involved they are in social or environmental activities. Conversely, higher-status jobs and higher income are associated with greater influence on community participation patterns that support the sustainability of waste bank programs (Manalu et al., 2014).

The social characteristics of the community are an important aspect of understanding community participation in waste management. Emile Durkheim explained two forms of social solidarity: mechanical solidarity, common in traditional societies, and organic solidarity in modern societies (Fathoni, 2024). Traditional societies share similar values and intellectual frameworks, making it easy to form a sense of togetherness and friendship. Modern society is described as an organic group with diverse social roles and more complex structures (Vejar, 2019). This pattern shows that community social relations can shape how individuals cooperate and engage in shared interests.

Durkheim's concept of social solidarity helps explain the nature of social relations and how community cooperation forms in semi-urban areas. Semi-urban societies have mixed mechanical and organic characteristics, making social bonds through social closeness a form of capital for building solidarity amid existing problems. Meanwhile, the complexity and differentiation of work among members encourage more complex patterns of cooperation. According to Durkheim, humans are destined to become social creatures, so cooperation can eventually form in whatever form or condition they depend on each other (Wandi et al., 2021). In community-based waste management, relationships among people in semi-urban areas are realized through cooperation in sorting, collecting, processing, and supervising management.

If Durkheim's perspective explains the basis for community cooperation, then Cohen and Uphoff explain community involvement in the development process. Theoretically, Cohen and Uphoff's (1977) concept of community participation emphasizes the importance of citizen involvement at all stages of the development process. The four types of community participation introduced by Cohen and Uphoff include: (Rahmanita Fauzia & Arieffiani, 2020)

1. Participation in decision-making reflects community involvement from the early stages of planning, where they have the opportunity to voice their aspirations, provide input, and determine the direction

of policies that affect their common interests. Theoretically, this stage underpins the legitimacy of development programs, as the decisions reflect the collective will.

2. Participation in implementation demonstrates the community's genuine involvement in carrying out the agreed program. Cohen and Uphoff emphasize that at this stage, the community plays not only the role of an object but also that of a subject of development. Participation can take the form of contributions of labor, time, funds, materials, or information, all of which reflect the principle of collaboration between the government and the community.
3. Participation in the utilization of results emphasizes the importance of equitable distribution of the benefits of the Development program. From a theoretical perspective, community participation relates to the principles of equality and empowerment. Every community should have equal access to a program's benefits. The success rate of participation at this stage can be measured by the extent to which people feel improved well-being and positive changes in their lives.
4. Participation in evaluation is a form of collective reflection on the effectiveness of program implementation. From a theoretical perspective, this stage functions as a feedback loop to assess alignment between planning and achieved results, as well as to identify potential improvements for the future. Participatory evaluation ensures that the development process remains adaptive and sustainable in line with community needs.

Increased community participation in waste management depends not only on individual awareness but also on effective environmental communication as a strategic tool for building understanding and collective behavioral change. According to Robert Cox's Theory of Environmental Communication (2010), communication has two main functions: pragmatic and constitutive. The pragmatic function serves as a practical tool to encourage concrete community action to protect the environment. In contrast, the constitutive function emphasizes how language, symbols, and messages shape ways of thinking and social values related to environmental issues (Wulandari et al., 2025).

Environmental communication in waste management bridges existing information and action. According to Flor & Cangara (2018), environmental communication includes approaches, strategic principles, and



Figure 1. Influence between waste management factors

communication techniques that aim to manage and protect the environment while increasing public awareness and participation. Communication is not only message delivery but also a persuasive, educational strategy for social change. Through effective communication, people not only learn the principles of reduce, reuse, and recycle, but also understand how their behavior directly affects the surrounding environment.

Learning-based social activities such as participatory dialogues, hands-on training, and collaborative practices can increase community involvement in waste management programs (Sunarti et al., 2023). Through open, participatory communication, communities feel involved in decision-making and feel a moral responsibility for their environment's sustainability. In other words, planned, inclusive environmental communication can

strengthen community participation. This approach not only fosters ecological awareness, but also builds social solidarity to jointly create a clean, healthy, and sustainable environment.

Data on waste management and evaluation of waste management in Indonesia

Through literature research, the author found data collected by the Ministry of Environment and Forestry of the Republic of Indonesia on the kemenhl.go.id website on waste management implementation in Indonesia in 2020–2025. In this section, the author compares these findings with the national waste reduction and management targets stated in Appendix I of Presidential Regulation Number 97 of 2017 concerning National Policies and Strategies for Household Waste Management and Household Temporary Waste Management (Jakstranas).

Table 1. Projected generation, reduction target, and waste handling target range for 2020 - 2025 (million tons)

2020		2021		2022		2023		2024		2025	
T	R	T	R	T	R	T	R	T	R	T	R
67.8	19.02	68.5	13.48	69.2	18.63	69.9	23.89	70.6	36.08	70.8	31.62

Note: T and R is abbreviation for target and realization, respectively.

Source: Presidential Regulation Number 97 of 2017 and Website of the Ministry of Environment and Forestry (<https://sampahnasional.kemenlh.go.id/portal-indikatif/data/capaian>)

Table 1 shows total household waste generation in Indonesia from 2020 to 2025. The government estimates household waste generation in Indonesia will surge to 67 million tons, with an estimated increase of 1 million tons per year. However, records from the Ministry of Environment and Forestry show waste generation at 19 million tons, fluctuating over the years with increases and decreases. This shows the need for stronger waste management so that this number of millions of tons will soon decrease to billions or even thousands of tons. Figure 2 presents further figures on waste reduction and handling in Indonesia (Presidential Regulation Number 97 of 2017 and the Website of the Ministry of Environment and Forestry)

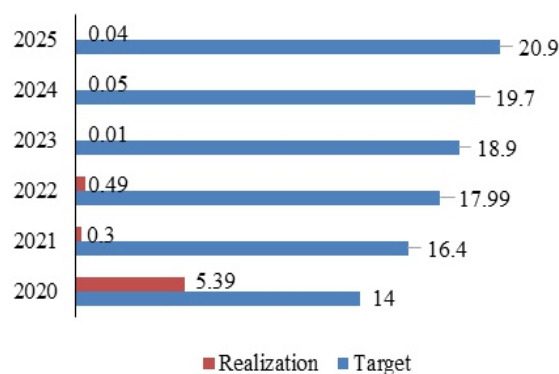


Figure 1. Waste reduction in Indonesia (2020 – 2025)

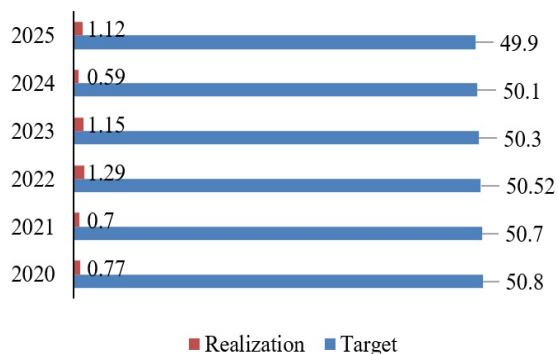


Figure 2. Waste handling in Indonesia (2020 - 2025)

Figure 2 shows the reduction of waste in Indonesia from 2020 to 2025, showing an increase in field realization, even though it is still far from the target. Although the 2025 target is to reduce waste by 20.9 million tons, in reality only 4 thousand tons were reduced. However, this is still better because it shows the public is becoming more aware of waste accumulation than in previous years, when the gap between the target and the actual result was much larger. Meanwhile, Figure 3 shows the

gap remains large for waste handling. By 2025, the target is to handle 49.9 million tons of waste, but only 1.12 million tons are handled. This means only 2.24% of the target waste is handled; the remaining 48.78 million tons are not treated and are assumed to still accumulate in illegal dumps, pollute waterways, or accumulate on open land.

Evaluating the effectiveness of community-based waste management policies is an important step in assessing how well public policies achieve their stated objectives. According to Van Meter and Van Horn's policy implementation model, six indicators influence policy implementation success: policy standards and goals, inter-organizational communication, resources, implementing disposition, the characteristics of implementing agencies, and socio-economic and political conditions (Margianto & Nugroho, 2025). These six indicators serve as a reference for assessing the success of policy implementation at the local level, particularly in semi-urban areas with social and institutional characteristics different from those of urban or rural areas.

In a study by Artha et al. (2023), the authors found that waste management policies in Indonesia remain ineffective. This is due to limited human resources and infrastructure, weak institutional coordination, and minimal active community participation. These conditions show that resource and bureaucratic structure dimensions play a major role in determining policy implementation success. In semi-urban areas, similar problems often arise due to limited regional budgets and the low capacity of environmental management officials (Artha et al., 2023). Other studies, such as Oktavia & Salam (2023), emphasize that policy success depends not only on the existence of regulations but also on effective communication between policymakers and the community implementing the policy in the field. Ineffective communication often leads to misunderstandings about policy substance, leaving the community unclear about its roles and responsibilities in the waste management system. In addition, inconsistent community compliance with waste management programs often hinders their implementation. However, this is relevant for semi-urban areas, which tend to have heterogeneous levels of education and environmental awareness.(Oktavia & Salam, 2025)

Community involvement as the main implementer of policies is also a crucial factor in policy effectiveness. Pujowati (2022) found that community participation in semi-urban areas is relatively high when local governments

support it through institutional facilitation and strengthening self-help groups. However, this study also identifies a gap between normative policies and social reality, where community involvement is often only ceremonial (Yenik Pujowati, 2021). This highlights the importance of an in-depth evaluation of how well formal policies align with their implementation in the field. Inter-agency communication is also a key determinant of policy effectiveness. Communication barriers between government agencies and community-level implementing organizations often lead to policy fragmentation. In community-based waste management, weak cross-sectoral coordination can hinder program sustainability, for example, through unclear divisions of responsibility among environmental agencies, sub-districts, and non-governmental organizations.

The research data discussed above show that the effectiveness of waste management policies in semi-urban areas depends heavily on synergy among components, including communication, adequate resources, responsive implementers, and effective bureaucratic structures. The biggest challenge, then, is integrating community participation into this still top-down system and implementing the existing strategic plan sustainably. Therefore, this study strengthens the view that the successful implementation of waste management policies cannot be separated from the social and institutional dimensions of semi-urban communities. Strengthening implementers' capacity, improving communication among stakeholders, and providing wider opportunities for community participation are key strategies for creating effective and sustainable waste management policies.

Analysis of normative waste management policies with Van Meter and Van Horn policy implementation models

In general, public policy implementation can be understood through two approaches: top-down and bottom-up. The top-down approach is a policy implementation model in which the central government or top-level decision-makers set policy, and lower-level bureaucrats carry it out. Meanwhile, the bottom-up approach focuses on the active role of lower-level implementers, as well as the participation of target groups or communities (Ossenbrink et al., 2019). According to the policy implementation model, Van Meter and Van Horn (1975) view policy implementation as actions or decisions by government sectors, organizations, and citizens that directly contribute to achieving policymakers' targets

(Xie et al., 2025).

In Indonesia, the waste management policy framework is built through a top-down approach. The government established Law Number 18 of 2008 concerning Waste Management as the national foundation that directs the shift from conventional practices to a system based on downstream reduction and systematic downstream handling. The policy is then derived into sectoral policies at the operational level in Presidential Regulation Number 9 of 2017 concerning National Policies and Strategies for Household Waste Management and Household Waste, which sets national quantitative targets for waste reduction and handling in Indonesia. Thus, Indonesia's waste management policies are top-down because the central government sets the direction, norms, institutions, and management targets as a reference for local governments and implementing actors.

However, a top-down approach to policy formulation does not necessarily make overall implementation top-down. In practice, achieving waste management targets depends on local governments, community groups, and individuals as actors who interact with waste at the local level. This suggests room for a bottom-up approach to policy implementation. This is evident in waste banks, which began as community innovations before gaining recognition and formalization through government policies. Waste bank innovation was initially pioneered by Bambang Suwerda in Bantul, Yogyakarta, in 2008 (Lestari, 2012). The innovation developed rapidly and was later formalized under applicable legal regulations.

This phenomenon shows that waste management policies form and are implemented from the bottom up, driven by grassroots innovations that the government then develops, replicates, accommodates, and legalizes through regulations. This pattern shows that community-based waste management policies ultimately have a clear goal and target for community participation. To evaluate waste management policies, this study uses the theory of Van Meter and Van Horn, which examines 6 aspects (See Table 2).

Table 2 maps the six indicators of policy implementation by Van Meter and Van Horn and shows that a normative framework for waste management in Indonesia, in general, is available. However, these implementations vary in certainty and binding force. For example, laws and government regulations govern policy standards and objectives, as well as interorganizational communication. At the same time, the characteristics of implementing bodies and implementing dispositions are left

Table 2. Normative policy implementation with six indicators of policy implementation van meter and van horn

Variable van Meter dan van Horn	Findings
Standards and Policy Objectives	already exist but are not integrated into one legislation. Law 18/2008 does not contain quantitative measures but sets objectives for waste management for health and the environment. The target for community participation appears in Chapter IX, Standardization, as targets, and in Annex I of GR 81/2012 as the projected waste-reduction range for 2017-2025.
Resources	Already exist but have little inequality. • Human Resources/institutions are regulated in Chapter III of Law 18/2008, which divides authority in stages between the central, provincial, and district/city governments. • Financial resources are regulated in Chapter VII U 18/2008 concerning financing and compensation. The central and regional governments are obliged to finance the implementation of waste management from the State Budget and Regional Budget
Communication between organizations	Already exists Article 6, letter g, of Law 18/2008 stipulates that the central and regional governments must coordinate between government agencies, communities, and business actors on waste management.
Characteristics of the Regulatory	Implementing Agency: The main legislation does not specifically regulate the implementing body; it is <i>lex generalis</i>, and local governments determine its formation through respective regional regulations. Article 26 of GR 81/2012 emphasizes that local governments can form waste management institutions, and that the form is intended to enable partnerships with other business entities or implementing units, so the regional regulations further regulate the implementing bodies.
Implementing disposition	In the implementing disposition section, the author uses the Bantul Region as a semi-urban example (Hidayat et al., 2025). Through Bantul Regional Regulation Number 9 of 2025, concerning: - Article 12 (1) → waste management must be carried out by local governments, sub-districts, waste management institutions, and every person - Article 12 (2) → Waste management institutions consist of independent waste management institutions, producers, and PJPS. - Article 39 → rights and obligations of waste management institutions - Chapter V → Sanctions

	It is further regulated in the implementing regulations – the Bantul Regent Regulation Number 121 of 2021, containing: - Article 13 → organizational structure and work procedures - Article 22 → Guidance and supervision
Social, Economic, and Politic Condition	• Social Dimension From the social dimension, a gap exists between knowledge and practice. For example, in the peri-urban area of Sleman, many people know about the 3Rs but do not automatically apply them in their daily waste management practices (Yunastiawan, 2021). • Economic Dimension A study by Wesnawa & Christiawan (2024) in Denpasar, which has shifted from rural to urban, shows social transformation in waste management: changes in livelihoods and economies shift consumption patterns and increase plastic waste generation. • Political Dimension Waste management is also influenced by stakeholder dynamics and how regional leaders, especially in suburbs, manage and encourage collaboration between stakeholders and communities. For example, a study by Mukhlis et al. (2025) shows that stakeholder dynamics can determine program development in semi-urban areas.

to their respective regional regulations. This pattern shows that the effectiveness of normative policies depends on local governments' initiative in translating central legal norms.

From the perspective of community participation, the six indicators in Table 2 show that community participation and individual legal obligations are determined at the level of local regulations, indicating that the normative framework on community participation has legal certainty. However, this must also be strengthened by guaranteeing resources to encourage community participation.

Strategies for Improving the Effectiveness of Community-Based Waste Management Programs

After conducting an initial evaluation of the effectiveness of implementing community-based waste management policies in semi-urban areas, the next important step is to design a systematic strategy to improve effectiveness. The development of this strategy must be based on a well-established theory of public policy implementation, in this case referring to the opinion of Van Meter & Van Horn (1975),

which shows that the success of policy implementation is influenced by six components, namely policy standards and objectives, interorganizational communication, resources, implementing disposition, characteristics of implementing agencies, and socio-economic and political conditions. According to Van Meter & Van Horn, policy implementation is not only a matter of issuing regulations, but also a matter of how these regulations are translated into concrete actions through the institutions that implement them, implementers who have the right attitudes and capabilities, and a conducive socio-economic environment (Van Meter & Van Horn, 1975).

In semi-urban areas, strategies to improve waste management policy implementation must be both administrative and participatory. Successful community-based waste management depends on strengthening collaboration among the government, the community, and the private sector within a good-governance framework. This approach emphasizes that waste management is not solely the responsibility of government institutions, but rather an integral part of citizens' social practices that must be

internalized through awareness, partnership, and empowerment (Tunti et al., 2021).

First, community participation is key to improving policy implementation. The community should be positioned not as objects of policy, but as active subjects who design, implement, and evaluate waste management policies. Community involvement through environmental forums, community self-help groups, and waste banks has successfully fostered a sense of ownership of these policies. This strategy strengthens implementers' disposition because the community does not just accept policies but actively participates as implementers or implementation partners (Tunti et al., 2021). This increases public compliance with the waste sorting, collection, and management system because they are directly involved in every stage of the policy.

Second, multi-stakeholder collaboration is an important strategy for strengthening policy effectiveness. Waste management policies often fail not because of weak regulations, but because actors lack coordination. Therefore, local governments need to create a coordination space that involves various parties, such as non-governmental organizations (NGOs), community leaders, academics, and the private sector, which has financial and technological capacity. This collaboration enables the integration of resources across financing, infrastructure, and technological innovation in waste management. In line with the principle of good governance, open and transparent collaboration also strengthens accountability in local policy implementation.

Third, environmental education and strengthening public awareness are equally important strategies. Research in Kupang shows that policy effectiveness depends largely on how well the community understands the social and ecological value of waste management. Therefore, continuous education programs are needed, whether through formal education curricula, community training, or social campaigns. Environmental education encourages behavioral change toward a sustainable lifestyle, enabling the community to manage waste at the source using the 3R principle (Reduce, Reuse, Recycle). Fourth, strengthening governance and institutional structures is also an important element in the strategy for effective policy implementation. An efficient, responsive, and transparent bureaucratic structure enables effective policy implementation in the field. Local governments need to establish waste management units or agencies with clear authority, competent human resources, and cross-sectoral coordination

mechanisms. Research in Kupang shows that local institutions supported by regional regulations accelerate the integration of participatory policies into the local government system.

Fifth, leveraging the economic potential of waste also supports policy effectiveness. The circular economy approach, implemented through waste banks or community recycling units, has been shown to increase residents' motivation to participate. When waste management provides economic value, community participation grows naturally because residents feel tangible incentives. Thus, waste management policies can shift from mere administrative obligations to sustainable, productive economic activities. Finally, strategies to improve effectiveness must also focus on digitization and information technology innovation in waste management. The government can develop an application-based information system that allows the public to report environmental conditions, monitor waste collection schedules, and access digital education on waste management. Information technology not only improves bureaucratic efficiency, but also strengthens transparency and public trust in policy.

To improve the effectiveness of implementing community-based waste management policies, policy communication and public education play a key role. Two recent empirical studies provide strong evidence that structured communication strategies and targeted education can strengthen community participation, an important component in the policy implementation evaluation framework. According to Wulandari et al. (2025), environmental communication variables consisting of policy socialization, communication media, and waste transactions as education have a positive and significant effect on community participation (Wulandari et al., 2025). Socialization here takes the form of activities to introduce and communicate waste management policies to the community; communication media include the use of information channels such as posters, social media, or brochures; while waste transactions as education refer to the role of waste banks as a learning arena that connects residents' daily activities with waste management policies. These results show that when the community is not only informed but also involved in practical activities and through relevant media, their participation increases significantly. This is highly relevant to policy communication strategies, as it shows that not only "socialization" matters, but also the quality and type of communication channels and practical

relationships with community activities.

In a study by Rahayu & Evanita (2024) in Talang Lindung Village, the community enriched their perspective by distinguishing between mass communication (such as focus group discussions and banners) and personal communication (door-to-door counseling). They found that although mass communication is useful for increasing public knowledge of waste management regulations and policies, the most effective behavioral change comes through personal communication that directly reaches residents individually or in small groups. These findings indicate the need for a layered policy communication strategy: using mass media for general policy dissemination, but then following up with a personal approach that strengthens public understanding and commitment. In a semi-urban context, where community heterogeneity is high and access to information can vary, such a strategy is essential to reach groups that may be less exposed to mass campaigns.

Based on these two studies, several strategic implications can be formulated to strengthen communication and policy education in participatory waste management, including:

1. Establish a regular, multi-channel policy dissemination system: Local governments should hold regular community forums (community groups, waste banks, neighborhood associations) to explain waste management policies, including the rights and responsibilities of the community.
2. Create communication channels that are relevant to the characteristics of local communities by selecting appropriate communication media for semi-urban communities. This must also be supported by counseling or mentoring in areas where local government programs lack mass campaigns.
3. Provide facilities where the community can participate directly in waste management, such as transactions at waste banks, waste sorting at residents' homes, and 3R training.
4. Conduct periodic evaluations to measure the extent of the community's understanding, how the community's attitude in managing waste has changed, and the obstacles to information communication that may arise.
5. To increase effectiveness, the community must also be encouraged to be involved in planning materials and communication channels so that the message to be conveyed can be right on target and contextual for the semi-urban community.

Given the obstacles to implementing waste reduction policies across Indonesia,

strategies to improve policy implementation must focus on systemic and participatory strengthening, not merely technical or operational improvements. This effort focuses on integrating local policies with ecological awareness and social values in semi-urban communities. This ensures existing policies are not only administrative but also gain social legitimacy from the community. Successful implementation of community-based waste management policies requires collaboration among government stakeholders, the private sector, and society, supported by adaptive regulations, responsive institutions, and a strong participatory culture. This approach not only strengthens policy effectiveness but also promotes sustainability in environmental management at the local level.

■ CONCLUSION

Based on the study using the policy implementation model by Van Meter and Van Horn as a scalpel analysis, it can be concluded that waste management policies normatively have been accommodated in laws and regulations from the central to regional levels. However, the implementation of community participation remains suboptimal. Legal certainty on the community's rights and obligations to participate exists but has not been balanced with adequate encouragement from relevant institutions to position the community as active subjects, not just objects, in every program and related policy-making process. To improve the effectiveness of community-based waste management programs, it is necessary to strengthen resources to support participation, harmonize derivative regulations to support regions without detailed technical institutions, and conduct periodic monitoring and evaluation among stakeholders. As a follow-up, local governments need to strengthen collaboration with communities, the private sector, and environmental non-governmental organizations to improve regional waste management. Education and socialization programs are also important to build a mindset in people to care more about the environment, especially in semi-urban areas.

■ DECLARATION OF GENERATIVE AI USAGE IN THE WRITING PROCESS

During the compilation of this work, the author used ChatGPT to process and simplify numerical data into percentages and decimals, as well as summarize descriptions from long and foreign-language sources of legal material. After using the tool, the author checks and re-

edits before incorporating it into this article. The author is fully responsible for the publication's content.

■ REFERENCES

- Ambina, D. G. (2019). *Tinjauan Pemilahan Sampah Menurut Undang-Undang Nomor 18 Tahun 2008 tentang Pengelolaan Sampah* [Review of Waste Sorting According to Law Number 18 of 2008 Concerning Waste Management]. *Bina Hukum Lingkungan*, Vol. 3. No. (2), 171–185. <https://doi.org/10.24970/jbhl.v3n2.13>
- Ariawan, I. G. K. (2013). Metode Penelitian Hukum Normatif. *Kertha Widya*, 1(1), 21–30. <https://doi.org/https://doi.org/10.37637/kw.v1i1>
- Artha, A. D., Nurasa, H., & Candradewini, C. (2023). Recognizing and Detecting the Effectiveness of Policy Implementation Waste Management in Indonesia. *Jurnal Public Policy*, 9(3), 201. <https://doi.org/10.35308/jpp.v9i3.7656>
- Asteria, D., & Heruman, H. (2016). *Bank Sampah Sebagai Alternatif Strategi Pengelolaan Sampah Berbasis Masyarakat di Tasikmalaya* [Waste Banks as an Alternative Community-Based Waste Management Strategy in Tasikmalaya]. *Jurnal Manusia Dan Lingkungan*, 23(1), 8.
- Benuf, K., & Azhar, M. (2020). *Metodologi Penelitian Hukum sebagai Instrumen Mengurai Permasalahan Hukum Kontemporer* [Legal Research Methodology as an Instrument for Analyzing Contemporary Legal Problems]. *Gema Keadilan*, 7(1), 20–33. <https://doi.org/https://doi.org/10.14710/gk.2020.7504>
- Christiawan, P. I., & Lai Nguyen, T. P. (2024). Re-Framing the Interlinked between Demographic Transition and Land-Use Change in Developing Countries Peri-urbanization. *Indonesian Journal of Geography*, 56(3), 344–356. <https://doi.org/10.22146/ijg.89118>
- Fathoni, T. (2024). The Concept of Social Solidarity in Modern Society: Émile Durkheim's Perspective. *JCD; Journal of Community Development and Disaster Management*, 6(2), 129–147. <https://doi.org/10.37680/jcd.v6i2.6402>
- Febrian, S. (2025). Socio-Ecological Justice in Waste Governance: Community Resilience in Peri-Urban Piyungan, Yogyakarta. *Journal of Society Bridge*, 3(2).
- Flor, A. G., & Cangara, H. (2018). *Komunikasi Lingkungan: Penanganan Kasus-Kasus Lingkungan Melalui Strategi Komunikasi*. Kencana Prenada Media Group.
- Hidayat, F. R., Muhammad, U. K., Hail, K. A., & Pramita, J. (2025). *Identifikasi Kawasan Peri-urban di Kawasan Perkotaan Yogyakarta* [Identification of Peri-urban Areas in the Yogyakarta Urban Area]. *Edusaintek : Jurnal Pendidikan, Sains Dan Teknologi Institut Teknologi*, 12(4), 2377–2399. <https://doi.org/10.47668/edusaintek.v12i4.2131>
- Kusumaningrum, A., & Azinar, M. (2018). *Kepesertaan Masyarakat dalam Jaminan Kesehatan Nasional Secara Mandiri* [Community Participation in National Health Insurance Independently]. *Higeia Journal of Public Health Research and Development*, 2(1), 149–160. <http://journal.unnes.ac.id/sju/index.php/higeia>
- Lestari, S. (2012). *Bank Sampah, ubah sampah jadi uang*. BBC Indonesia. https://www.bbc.com/indonesia/majalah/2012/07/120710_trashbank
- Lingkungan, K., Pengendalian, H. / B., & Hidup, L. (2025). *KLH-BPLH Tegaskan Arah Baru Menuju Indonesia Bebas Sampah 2029 dalam Rakornas Pengelolaan Sampah 2025*. Kementerian Lingkungan Hidup/Badan Pengendalian Lingkungan Hidup. <https://www.kemenlh.go.id/news/detail/klh-bplh-tegaskan-arah-baru-menuju-indonesia-bebas-sampah-2029-dalam-rakornas-pengelolaan-sampah-2025>
- Manalu, S. P., Chahaya, I., & Marsaulina, I. (2014). *Faktor-Faktor Yang Berhubungan Dengan Partisipasi Masyarakat Dalam Program Bank Sampah Di Kelurahan Binjai Kecamatan Medan Denai Kota Medan Tahun 2013* [Factors Related to Community Participation in the Waste Bank Program in Binjai Village, Medan Denai District, Medan City in 2013]. *Lingkungan dan Kesehatan Kerja*, 3(1), 1–7. <https://media.neliti.com/media/publications/14453-ID-faktor-faktor-yang-berhubungan-dengan-partisipasi-masyarakat-dalam-program-bank.pdf>
- Margianto, D., & Nugroho, H. S. (2025). Effectiveness of Incentive and Disincentive Programmes as a Waste Management Strategy in Sleman District. *Jurnal Partisipatoris*, 7(2), 26–48.
- Marzuki, P. M. (2025). *Penelitian Hukum Edisi Revisi* (Cetakan ke). Prenada Media Group.
- Van Meter, D. S., & Van Horn, C. E. (1975). The Policy Implementation Process: A Conceptual Framework. *Administration &*

- Society, 6(4), 445–448. <https://doi.org/10.1177/009539977500600404>
- Mukhlis, I., Fauzan, S., Rahmawati, F., Silva, S. De, & Melati, I. S. (2025). Stakeholder dynamics and sustainable waste management in peri-urban settings : a case study of actor interactions in Indonesia. *Community Case Study Article*, 7(March). <https://doi.org/10.3389/frsc.2025.1509601>
- Nasution, N. A. (2025). *Beyond Sosialisasi: Peran Komunitas "Pematang Hijau" Dalam Mendorong Adopsi Gaya Hidup Zero Waste di Desa Pematang Johar* [Beyond Socialization: The Role of the "Pematang Hijau" Community in Encouraging the Adoption of a Zero Waste Lifestyle in Pematang Johar Village]. *Krepa : Kreativitas Pada Abdimas*, 7(3). <https://doi.org/10.9765/Krepa.V218.3784>
- Nurfadhillah, A., & Rahmawati, R. (2024). *Analisis Ketidakefektifan Pengelolaan Sampah Di Kabupaten Bogor Melalui Lensa Teori Struktural Fungsionalisme* [Analysis of the Ineffectiveness of Waste Management in Bogor Regency Through the Lens of Structural Functionalism Theory]. *Administratie: Jurnal Administrasi Publik*, 7(1), 2715–2499. <https://ojs.unida.ac.id/AJAP/article/view/12297>
- Nurjamiludin, I., Mukti, A. T. S., Rohmah, A. S., Hidayat, I. T., & Ubaidillah, D. S. (2024). *Zero Waste Lifestyle Guna Mencapai Kesadaran Masyarakat Terhadap Program Karangbenda Bebas Sampah* [Zero Waste Lifestyle to Achieve Public Awareness of the Karangbenda Waste-Free Program]. *Community Engagement and Sustainable Development*, 1(2), 235–249. <https://ejournal.alfarabi.ac.id/index.php/society/article/download/666/231/2420>
- Oktavia, F. K., & Salam, R. (2025). Implementation of Waste Reduction Policy under Regional Regulation No. 13/2019 on Amendments to Regional Regulation No. 3/2013 on Waste Management in Tangerang Selatan. *Jurnal Manajemen Publik Dan Kebijakan Publik*, 7(2), 151–168.
- Ossenbrink, J., Finnsson, S., Bening, C. R., & Hoffmann, V. H. (2019). Delineating policy mixes : Contrasting top-down and bottom-up approaches to the case of energy-storage policy in California. *Research Policy*, 48(10), 103582. <https://doi.org/10.1016/j.respol.2018.04.014>
- Parassa, H. S., Sari, J. A., & Mujtahid, I. M. (2025). Urban Sustainability in Practice: Analyzing the Implementation of the Low-Carbon City Program in Makassar. *Jurnal Analisis Kebijakan Dan Pelayanan Publik*, 11(2), 143–163. <https://doi.org/10.31947/jakpp.v11i2.42159>
- Rahayu, S., & Evanita, S. (2024). Environmental Communication Strategy for Sustainable Waste Management Through Community Empowerment. *Journal of Business Studies and Management Review*, 7(2), 125–130. <https://doi.org/10.22437/jbsmr.v7i2.33500>
- Rahmanita Fauzia, B. I., & Arieffiani, D. (2020). *Partisipasi Masyarakat dalam Pengelolaan Sampah (Studi pada Bank Sampah Kota Surabaya)* [Community Participation in Waste Management (A Study of the Surabaya City Waste Bank)]. *Aplikasi Administrasi: Media Analisa Masalah Administrasi*, 23(2), 51. <https://doi.org/10.30649/aamama.v23i2.137>
- Sunarti, S., Zebua, R. S. Y., Tjakraatmadja, J. H., Ghazali, A., Rahardyan, B., Koeswinarno, K., ... & Ansyah, R. H. A. (2023). Social learning activities to improve community engagement in waste management program. *Global Journal of Environmental Science and Management*, 9(3), 403–426.
- Suryani, A. S. (2014). *Peran Bank Sampah Dalam Efektivitas Pengelolaan Sampah* [The Role of Waste Banks in Effective Waste Management]. *Aspirasi: Jurnal Masalah-Masalah Sosial*, 5(1), 71–84. <http://www.tempo.co/read/news/2012/04/15/063397147/>
- Taekema, S. (2021). Methodologies of Rule of Law Research: Why Legal Philosophy Needs Empirical and Doctrinal Scholarship. In *Law and Philosophy* (Vol. 40, Issue 1). Springer Netherlands. <https://doi.org/10.1007/s10982-020-09388-1>
- Tunti, M. E. D., Kerihi, A. S., & Mutia, K. D. (2021). Waste Management Strategy Through Community Participation In Realizing Good Governance in Kupang City. *Eduvest-Journal of Universal Studies*, 1(12), 1-533.
- Vejar, C. (2019). *Durkheim and the Structure and Function of Society*. <https://www.ebsco.com/research-starters/social-sciences-and-humanities/durkheim-and-structure-and-function-society>
- Wandi, J. I., Afrita, N., & Hefni. (2021). Study of “Functional Structure” Emilie Durkheim Reviewed From Educational

- Anthropology On Character And Behaviorsociety. *Jurnal Pengetahuan Islam*, 1(1), 34–50. <https://doi.org/https://doi.org/10.55062/IJPI>
- Wesnawa, I. G. A., & Christiawan, P. I. (2024). Peri-urbanization and Waste Dynamics : Navigating Challenges in Peri-Urban Waste Management. *ICLSSE*, October 17. <https://doi.org/10.4108/eai.17-10-2024.2353693>
- Wulandari, A., Hernawan, W., & Waskito, B. (2025). The Effect of Environmental Communication on Community Participation in Waste Management (Case Study of Emak.id Waste Bank, South Lampung, Indonesia). *CONVERSE Journal Communication Science*, 2(1), 13. <https://doi.org/10.47134/converse.v2i1.4587>
- Xie, Y., Liu, Y., & Dong, L. (2025). The role of governance attention in implementing climate change mitigation : Case study of Shanghai, China. *Cleaner and Responsible Consumption*, 18, 1–21. <https://doi.org/https://doi.org/10.1016/j.clrc.2025.100315>
- Yenik Pujowati. (2021). Policy Effectiveness of Community-Based Waste Management in the City Kediri. *International Journal of Social Science*, 1(1), 23–30. <https://doi.org/10.53625/ijss.v1i1.31>
- Yuliana, I., & Wijayanti, Y. (2019). Partisipasi Masyarakat pada Program Bank Sampah. *Higeia Journal of Public Health Research and Development*, 3(4), 625–634. <https://doi.org/https://doi.org/10.15294/higeia/v3i4/30681>
- Yunastiawan, A. (2021). The Implementation of the 3R Principle on the Household Solid Waste Management in Sleman, Yogyakarta. *International Conference on Science and Engineering (ICSE-UIN-SUKA 2021)*, 211, 210–216.
- Yunita, Ardiansyah, M., & Amalia, H. (2021). Sistem Informasi Bank Sampah Dengan Model Prototipe [Waste Bank Information System with Prototype Model]. *Inti Nusa Mandiri*, 16(1), 15–24.