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# Beyond the regulation: Institutional structure and behavioral challenges in community-based waste policy

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**Abstract**
This study analyzes the implementation of Malang City's Community-Based Waste Management Program under Regional Regulation No. 7 of 2021. Using a qualitative descriptive design, data were collected via interviews, observation, and documentation at the Environmental Agency, waste banks, and TPS3R facilities. Policy implementation was assessed using George C. Edward III's model, which comprises communication, resources, disposition, and bureaucratic structure. The results indicate that implementation has generally proceeded well. The program is supported by a strong regulatory foundation, local government commitment, active socialization, and dedicated implementers. However, several inhibiting factors persist. These include the uneven distribution of waste management facilities across districts, limited human resources, and low community awareness regarding source-level waste sorting. Additionally, cross-sectoral coordination still requires strengthening. The study concludes that while Malang City's waste management policy possesses a robust institutional and regulatory foundation, its full effectiveness depends on achieving more equitable facility distribution and consistent behavioral changes within the community.

**Keywords:** Policy implementation, community-based waste management, regional regulation, George C. Edward III, waste bank, Malang City

## Introduction

Waste management constitutes one of the principal challenges in urban development. Population growth, rising economic activity, and changing consumption patterns cause the volume of waste generated to increase continuously from year to year. Malang City, one of the major urban centers in East Java Province and a hub of education, trade, and urbanization in the Malang Raya region, faces this challenge acutely: according to the Malang City Environmental Agency (Dinas Lingkungan Hidup, DLH), community waste generation reaches more than 600 tons per day, with the limited remaining capacity of the Supiturang Final Processing Site (TPA) creating potential environmental problems absent an effective, sustainable, and stakeholder-inclusive waste management system. This condition demands a paradigm shift in waste management, from a downstream focus on collection and disposal toward upstream reduction at the source.

Nationally, waste management policy direction is set out in Law No. 18 of 2008 on Waste Management, which affirms a paradigm shift from the collect-transport-dispose pattern toward management oriented around reduction and handling through the principles of reduce, reuse, and recycle (3R). This policy is reinforced through Government Regulation No. 81 of 2012 on the Management of Household Waste and Waste Similar to Household Waste, which emphasizes source-level sorting, recycling development, and community involvement in waste management, positioning the community no longer as a mere service object but as an active subject in realizing sustainable waste management.

As a follow-up to this national policy, the Malang City Government established Regional Regulation No. 7 of 2021[33] on Waste Management as the legal foundation for waste management in the city, replacing the earlier Regional Regulation No. 10 of 2010, which was deemed no longer consistent with evolving needs and national policy direction. Regional Regulation No. 7 of 2021 regulates various aspects of waste management, from reduction and handling, mandatory sorting, waste-bank development, and TPS3R management, to the involvement of the community, business sector, and civil-society institutions, reflecting the Malang City Government's commitment to a participatory, community-based waste management system.

Community-based waste management is one strategy developed to increase community participation in reducing waste generation at its source, realized through activities such as waste banks, composting houses, TPS3R facilities, and household- and neighborhood-level sorting movements. This approach is considered important because waste management success is determined not only by local government capacity but also by community awareness, participation, and self-reliance in managing the waste they generate; implementation of the community-based waste management program is accordingly one important indicator for assessing the success of Regional Regulation No. 7 of 2021's implementation.

Notwithstanding this normative commitment, implementation does not always proceed as expected. Prior research shows that community-based waste management programs frequently encounter obstacles in resource capacity, institutional capacity, community participation, and local government support. Noventi (2020) [21], examining problems in community-based waste management at the Matahari Waste Bank in Madiun City, finds that community-based waste management continues to face obstacles including limited human resources, low managerial knowledge and skill, insufficient local government support, and low community understanding of the importance of waste management, findings indicating that program success depends substantially on the quality of policy implementation involving multiple actors and supporting resources.

Field data further motivate this study's focus. Table 1 presents the distribution of community-managed waste banks and TPS3R units across Malang City's five districts.

**Table 1:** Distribution of Community-Based Waste Management Facilities across Malang City Districts

| No. | District | Number of Waste Bank Units | Number of TPS3R Units |
|---|---|---|---|
| 1 | Blimbing | 23 | 1 |
| 2 | Klojen | 52 | - |
| 3 | Kedungkandang | 51 | 2 |
| 4 | Sukun | 49 | 1 |
| 5 | Lowokwaru | 30 | 1 |

**Source:** DLH Kota Malang (2025) [17].

Table 1 shows that facility distribution remains uneven across Malang City's districts, with waste-bank density ranging from 23 units in Blimbing to 52 in Klojen, and TPS3R presence limited to only four of the five districts, indicating that community-based waste management facilities require further attention to reach equitable coverage. In the Malang City context, the existence of Regional Regulation No. 7 of 2021[33] needs to be accompanied by effective implementation for the objectives of waste reduction and handling to be optimally achieved; policy success is measured not only by the existence of regulation but by the extent to which its mandated programs can be implemented and generate tangible community impact. It is accordingly important to examine how the implementation of the Community-Based Waste Management Program in Malang City proceeds under Regional Regulation No. 7 of 2021 [33].

Based on this rationale, this study formulates two research questions: how is the Community-Based Waste Management Program in Malang City implemented under Regional Regulation No. 7 of 2021[33], and what factors support and hinder that implementation? Correspondingly, this study aims to describe and analyze the implementation of the Community-Based Waste Management Program in Malang City, and to describe and analyze the factors that support and hinder that implementation.

This inquiry carries significance beyond Malang City alone. As Indonesia's mid-sized and large cities alike confront rising waste generation under conditions of constrained final-disposal capacity, a challenge widely shared across the country's urban centers, community-based waste management has increasingly become the policy instrument of choice for closing the gap between generation and disposal capacity without requiring proportionally expanding landfill infrastructure. Understanding how such a program is implemented in practice, and where its implementation falls short of its regulatory intent, accordingly offers lessons relevant not only to Malang City's own waste-governance trajectory but to the broader national effort to operationalize Law No. 18 of 2008's reduction-oriented paradigm shift at the municipal level.

## Literature Review and Conceptual Framework

### 1. Public Policy

Public policy comprises a series of decisions and actions made by government to respond to public problems and achieve particular objectives in community life. Dye (2017) [9] defines public policy succinctly as whatever governments choose to do or not to do, affirming that policy encompasses not only government's active action but also its choice not to act on a given problem. Anderson (2015) [2] further identifies public policy's core characteristics as goal-oriented, made by legitimate authority, and binding on the community, encompassing the entire process from problem identification and formulation through decision-making, implementation, and evaluation. Howlett, Ramesh, and Perl (2020) [13] describe the public policy cycle as comprising problem identification, policy formulation, decision-making, policy implementation, and policy evaluation, interrelated stages forming a continuous process in which implementation constitutes a particularly crucial phase, translating policy goals and substance into concrete action the community can experience.

In the context of waste management in Malang City, public policy is realized through Regional Regulation No. 7 of 2021[33], the legal foundation for community-based waste management implementation, mandating the involvement of local government, the business sector, and the community in sustainably reducing and handling waste generation. Public policy is thus understood not merely as a regulatory product but as a continuous process whose success is substantially determined by the quality of its field implementation.

### 2. Policy Implementation

Implementation, from the English to implement, denotes providing the means for carrying out something and giving practical effect to something, meaning that implementing a policy must be accompanied by supporting instruments capable of generating impact (Wahab, 2004) [34]. Implementation is thus an action or execution of a carefully and comprehensively prepared plan, ordinarily carried out once planning is deemed complete, comprising activity, action, or a system mechanism aimed at achieving established objectives, rather than random or arbitrary activity (Usman, 2002; Setiawan, 2004). Islamy (2009) [14] distinguishes self-executing implementation, in which a policy is implemented automatically upon its formulation and ratification, from non-self-executing implementation, in which a public policy requires realization and execution by various parties for its objectives to be achieved, a distinction directly relevant to community-based waste management, which requires active, non-automatic engagement from government, facility managers, and the community alike. Hogwood and Gunn, as cited in Wahab (2004) [34], further describe implementation as proceeding through three broad stages: program design, encompassing clear objective-setting, performance standards, and cost and time planning; program execution, mobilizing structure, staff, resources, procedures, cost, and method; and monitoring and control, encompassing scheduling, supervision, and oversight to ensure smooth implementation and enable prompt corrective action where deviation occurs.

Studying policy implementation means seeking to understand what genuinely occurs after a program is enacted or formulated, encompassing both administrative efforts and efforts to generate a particular impact on society, influenced not only by the behavior of responsible implementing institutions but also by the political, economic, and social forces shaping implementation (Agustino, 2016) [1]. Factors determining implementation effectiveness include public respect for governmental authority and decisions, public awareness and willingness to accept policy, and the presence or absence of legal sanction, all of which bear

directly on how far a community-based program such as Malang City's waste management initiative can achieve voluntary, sustained community compliance.

## 3. The George C. Edward III Implementation Model

Policy implementation is a complex activity shaped by numerous factors influencing its success. In examining public policy implementation, Edward III begins with two central questions: what preconditions must be satisfied for policy implementation to succeed, and what are the primary obstacles to successful policy implementation? Edward III (Agustino, 2016) [1] answers these questions by proposing four variables or factors that jointly determine implementation success or failure: communication, resources, disposition, and bureaucratic structure.

Communication refers to the process of conveying policy information from policymakers to policy implementers; effective implementation requires that decision-makers already know what is to be done, meaning policy objectives and content must be communicated accurately, consistently, and comprehensibly to both implementers and target groups. Resources hold an equally important role in implementation, comprising human resources, sufficient in number and adequately skilled; budgetary resources, the funding required to finance policy operationalization, since resource limitation can generate low implementer disposition and even goal displacement absent a proper incentive and accountability system; facilities and equipment supporting operational execution; and information and authority, ensuring implementers know what to do and hold the legitimate power to act. Disposition concerns implementers' commitment, honesty, and democratic orientation; where implementers hold positive disposition toward a policy, they are more likely to execute it as intended by policymakers, while resistant or indifferent disposition can distort or entirely block implementation. Bureaucratic structure, following Edward III (Winarno, 2015) [35], concerns the extent to which implementing organizational arrangements support or constrain coordinated execution; a policy sufficiently complex to require cooperation among many actors demands a bureaucratic structure conducive to that cooperation, since an unsupportive structure leaves resources unmotivated and implementation obstructed, with standard operating procedures and fragmentation across implementing units, whether excessive or insufficient, identified as the two structural characteristics most capable of shaping organizational performance.

This study employs the Edward III model as its principal analytical framework because it offers a parsimonious, operationally clear structure directly applicable to a multi-actor, community-facing program such as Malang City's community-based waste management initiative, in which government (DLH), facility managers (waste banks and TPS3R), and the community must all be coordinated toward a shared behavioral objective, namely source-level waste sorting and reduction.

## 4. Community-Based Waste Management

Community-based waste management is an approach positioning the community as the primary actor in the waste-management process rather than merely a passive recipient of service, realized through sorting, reuse, recycling, and source-level waste reduction activities. Damanhuri and Padmi (2016) [7] describe integrated waste management as a system encompassing reduction, sorting, collection, transport, processing, and final disposal, with community-based approaches concentrated at the upstream, reduction end of this system. Ismawati (2018) [15] similarly frames community-based waste management within regional autonomy as an approach requiring active local-government facilitation of community initiative, while Suyoto (2020) [29] emphasizes that its success depends on the presence of accessible facilities, such as waste banks and TPS3R, that translate community willingness into concrete practice. Rahardyan and Matsuto (2013) [24], in a comparative study of community-based solid waste management in developing countries, find that such management holds substantial potential for strengthening urban waste systems, particularly in settings with limited local-government budget and technical capacity, with collaboration between government and local communities in managing waste banks, TPS3R, and reduce-reuse-recycle programs emerging as an effective model for strengthening environmental self-reliance and reducing the volume of waste reaching final disposal sites. Tchobanoglous and Kreith (2002) [30] further affirm, from an engineering-management perspective, that source reduction constitutes the most cost-effective tier of the waste-management hierarchy, reinforcing the strategic rationale for community-based, source-level intervention over downstream collection and disposal alone.

## 5. Prior Research

Table 2 summarizes five studies judged most directly relevant to this study's focus on the implementation of community-based waste management policy.

**Table 2:** Summary of Prior Studies on Community-Based Waste Management Policy Implementation

| Study | Focus / Location | Key Finding |
|---|---|---|
| Abdillah & Kurniawan (2024) [3] | TPS3R Lestari Rahayu, Desa Karanganyar, Kec. Gandusari, Trenggalek (2019-2020) | Implementation proceeded fairly well, though still constrained by community participation, program sustainability, and resource limitations |
| Mariane, Gnagey, Karali, & Hardiyanti (2025) [17] | Kelurahan Antapani Tengah, Kota Bandung | Implementation success is strongly shaped by inter-actor collaboration and strengthened institutional networks supporting community participation |
| Azahra & Riswanda (2025) [4] | Waste Bank Unit Unyur Makmur, Kec. Serang, Banten | Implementation not yet optimal due to facility limitations, low community awareness, and insufficient inter-institutional collaboration |
| Kristiono, Susilo, Arrozy, & Soewignyo (2022) [16] | Campus-community collaboration, Universitas Muhammadiyah Malang, Kab. Malang | Community-based waste management increases participation through multi-stakeholder collaboration between campus and community |
| Puspita, Rachmawati, & Sampurna (2023) [23] | Kota Sukabumi (quantitative) | Policy implementation significantly affects community participation, though obstacles remain in socialization and implementation consistency |

**Source:** Synthesized by the author from the reviewed literature.

Although research on community-based waste management has been extensive, most prior studies concentrate on the effectiveness of a single facility type, waste bank or TPS3R, on community participation levels, or on general program evaluation. Research specifically examining community-based waste management implementation under Malang City's Regional Regulation No. 7 of 2021[33] through the Edward III framework remains comparatively limited. This study accordingly offers novelty by focusing specifically on how communication, resources, disposition, and bureaucratic structure jointly shape implementation of this program in Malang City, so as to achieve effective, participatory, and sustainable waste management.

## 6. Conceptual Framework

Building on the Edward III (1980) [10] model, this study analyzes the implementation of Malang City's Community-Based Waste Management Program across four variables, communication, resources, disposition, and bureaucratic structure, alongside the supporting and inhibiting factors shaping that implementation. Table 3 summarizes this conceptual framework.

**Table 3:** Conceptual Framework: Edward III Implementation Variables and Indicators

| Variable | Indicators |
|---|---|
| Communication | Information delivery, policy socialization, clarity of rules/guidelines, inter-implementer coordination, and implementer/community understanding of program objectives |
| Resources | Human resources, budget, facilities and infrastructure, and information and authority supporting program implementation |
| Disposition | Implementer commitment, attitude, and willingness in carrying out the program, including consistency and service quality |
| Bureaucratic Structure | Division of tasks and functions, coordination mechanisms, standard operating procedures, and inter-actor involvement |

**Source :** Edward III Variables

# Research Methods

## 1. Research Approach and Site

This study employed a qualitative approach with a descriptive research design, selected because the research objective is to understand and describe in depth the implementation of Malang City's Community-Based Waste Management Program, including the dynamics of the process and the factors shaping it, rather than to test statistical relationships among variables. The study was conducted in Malang City, East Java Province, with its principal locus at the Malang City Environmental Agency (DLH) as the regional apparatus organization responsible for waste-management affairs, and at waste banks and TPS3R facilities forming part of community-based waste management implementation.

## 2. Research Focus

The research focus comprised two components, corresponding to the Edward III model summarized in Table 3: the implementation of the Community-Based Waste Management Program in Malang City, examined through communication, resources, disposition, and bureaucratic structure; and the factors supporting and hindering that implementation, encompassing obstacles and enabling conditions arising from communication, resources, disposition, bureaucratic structure, and community participation.

## 3. Data Sources and Informants

This study drew on primary and secondary data. Primary data were obtained through interviews and observation involving parties engaged in program implementation, including officials of the Malang City Environmental Agency, waste-bank managers, TPS3R managers, area apparatus, and community members participating in the program, providing empirical information on program execution, implementer roles, and field-level shaping factors. Secondary data comprised statutory regulation, regional-government planning and performance-report documents, waste data, community-based waste management program profiles, and relevant scholarly literature, used to verify and complement the primary data through source and method triangulation.

Informants were selected through purposive sampling, a technique for deliberately selecting informants based on considerations aligned with the research objective and focus, chosen for their knowledge, experience, and direct involvement in the phenomenon under study rather than for statistical generalizability (Creswell & Poth, 2018; Miles et al., 2014) [6, 18]. Snowball sampling was additionally available where informant recommendation indicated the need for further relevant informants. Table 4 summarizes the planned informant composition.

**Table 4:** Profile of Research Informants

| No. | Informant Category | Role in the Study |
|---|---|---|
| 1 | Head of the Malang City Environmental Agency (DLH) | Strategic policy direction and institutional oversight of waste management |
| 2 | Head of the Waste and Hazardous Waste (B3) Management Division, DLH | Technical planning, mentoring, and facilitation of community-based waste reduction programs |
| 3 | Waste Bank Unit (BSU) managers | Day-to-day operation of waste banks and direct engagement with resident customers |
| 4 | TPS3R managers | Operational management of reduce-reuse-recycle waste processing facilities |
| 5 | Waste bank customers / community members | Direct experience of program benefit, participation, and constraints |

**Source:** Field data, compiled by the researcher (2026).

### 4. Data Collection Technique

Data were collected through three complementary techniques. In-depth interviews were conducted semi-structurally to explore program implementation based on informants' experience, perception, and understanding, guided by the Edward III indicators in Table 3. Field observation was conducted to obtain factual data on program implementation directly at DLH, waste banks, and TPS3R facilities. Documentation encompassed the collection of supporting documents, including statutory regulation, performance reports, waste data, and program profiles relevant to the research.

### 5. Data Analysis Technique

Data were analyzed using the interactive model of Miles, Huberman, and Saldana (2014) [18], comprising three interrelated stages conducted continuously from the start of data collection through the completion of the study. Data condensation involved selecting, focusing, simplifying, and organizing data obtained from interviews, observation, and documentation according to the four Edward III indicators. Data display involved arranging condensed data into narrative, tabular, or diagrammatic form to clarify relationships among data and reveal emerging patterns. Conclusion drawing and verification involved interpreting the meaning of the assembled data, identifying supporting and inhibiting implementation factors, and drawing conclusions continuously verified through comparison across data sources to ensure a high degree of confidence in the resulting findings.

### 6. Trustworthiness of Data

Data trustworthiness was assessed through credibility, transferability, dependability, and confirmability (Creswell & Poth, 2018) [6], operationalized through four techniques: source triangulation, comparing data across informants; method triangulation, combining interview, observation, and documentation results; prolonged engagement, to deepen understanding of the research context; and peer debriefing, to test the consistency of the researcher's data interpretation. Through the combination of these four techniques, the study sought findings that are valid, reliable, and scientifically accountable.

## Results

### 1. Research Site Profile

Malang City is one of the major urban centers in East Java Province, holding a strategic role as a center of education, trade, services, and tourism within the Malang Raya region. Situated at an elevation of 440-667 meters above sea level with an area of approximately 110.06 square kilometers, the city is administratively divided into five districts, Klojen, Blimbing, Lowokwaru, Sukun, and Kedungkandang, comprising 57 kelurahan (urban villages). Continuous population growth, driven by expanding educational, commercial, and service activity, has generated a corresponding rise in public-service demand, including waste management, with municipal waste generation reaching more than 600 tons per day, sourced predominantly from household, commercial, traditional-market, public-facility, and educational-institution activity, placing sustained pressure on the limited remaining capacity of the Supiturang Final Processing Site (TPA).

The Malang City Environmental Agency (DLH), operating under and accountable to the Mayor through the Regional Secretary, holds primary responsibility for waste-management affairs, executing functions including technical policy formulation, regional policy implementation, coordination, mentoring, control, oversight, and evaluation in the environmental and waste-management domain. Operationally, community-based waste management program implementation is housed within DLH's Waste and Hazardous Waste (B3) Management Division, responsible for planning, mentoring, facilitation, and development of community-participation-based waste-reduction programs.

### 2. Overview of the Community-Based Waste Management Program

Malang City's community-based waste management program constitutes a strategic effort to realize sustainable waste management through strengthened community participation, developed as an implementation of Regional Regulation No. 7 of 2021, which emphasizes a paradigm shift from the end-of-pipe collect-transport-dispose pattern toward management oriented around source-level waste reduction. This approach positions the community as the primary actor in the waste-management process rather than a mere service recipient, active in sorting, reuse, recycling, and source-level waste-generation reduction, consistent with national policy under Law No. 18 of 2008 and Government Regulation No. 81 of 2012.

Program implementation is coordinated by DLH's Waste and Hazardous Waste Management Division and involves multiple actors, from local government, districts, and kelurahan, to waste-bank managers, TPS3R managers, community self-help groups, and the community as household waste generators. The program is realized through four principal activities: source-level waste sorting, separating organic, inorganic, and residual waste; waste-bank development, providing both economic value and environmental-education function; TPS3R optimization, reducing the volume of waste transported to the Supiturang TPA; and environmental socialization and education, strengthening community awareness and participation. The Malang City Government additionally pursues multi-stakeholder collaboration, engaging the community, business sector, educational institutions, and environmental communities, recognizing that waste management constitutes a cross-sectoral challenge no single actor can resolve alone.

### 3. Communication

Field data indicate that communication has been conducted continuously through socialization, mentoring, and coordination activities with the various parties involved in community-based waste management. As the Head of the Waste and Hazardous Waste Management Division explained, "we routinely conduct socialization to the community through kelurahan, waste banks, and community groups. Our officers also provide periodic mentoring so the community understands the importance of sorting waste at its source" (Head of Waste and B3 Management Division, DLH, interview, 2026). This account was corroborated by a waste-bank manager, who noted that DLH's communication and mentoring meaningfully assist field-level implementation: "we frequently receive mentoring from DLH, both on administrative management and technical

sorting practice. The information provided is clear enough to help us run waste-bank activities" (Waste Bank Manager, interview, 2026). A waste-bank customer similarly reported learning of the program through neighborhood-level (RT) socialization: "I first learned about this program through socialization in the neighborhood. After the benefits were explained, I began saving waste and sorting it from home" (Waste Bank Customer, interview, 2026).

These accounts indicate that communication intensity has helped strengthen community understanding of the importance of source-level sorting and reduction, though differences in understanding and participation persist across areas, shaped by variation in socialization frequency and community engagement.

**4. Bureaucratic Structure**

Program implementation involves multiple parties with distinct tasks and functions. As the Head of DLH explained, "this program's implementation is not the responsibility of DLH alone, but also involves districts, kelurahan, waste-bank managers, TPS3R, and the community, each with a role consistent with its respective task and authority" (Head of DLH, interview, 2026). A TPS3R manager similarly described periodic coordination with DLH supporting operational activity: "we always coordinate with DLH regarding operational needs and activity reporting. This coordination makes program implementation more directed" (TPS3R Manager, interview, 2026). These accounts indicate that implementation is supported by a reasonably clear division of tasks and coordination mechanism, though further strengthening of synergy among implementers remains necessary for more optimal, sustainable program execution.

**5. Resources**

Resource availability constitutes an important factor supporting implementation. The Head of DLH noted that "the Malang City Government continues to work toward providing facility and infrastructure support, including waste-bank and TPS3R development. However, facility and human-resource needs still require strengthening so service can reach the entire city" (Head of DLH, interview, 2026), an account reinforced by a TPS3R manager, who observed that operational-equipment availability substantially affects waste-management effectiveness: "existing facilities are quite helpful, but additional equipment is still needed so processing capacity can be further optimized" (TPS3R Manager, interview, 2026). These findings indicate that implementation is supported by human resources, facilities and infrastructure, and local-government budgetary support, with waste banks and TPS3R functioning as key supporting facilities, though several informants identified a continuing need for strengthened human-resource capacity, operational-facility development, and additional supporting infrastructure, particularly given the uneven facility distribution documented in Table 1.

**6. Disposition**

Implementer commitment emerged as an important factor in sustaining the program. As the Head of the Waste and B3 Management Division put it, "we continue working to encourage active community involvement in waste management. Although not easy, we keep providing continuous mentoring" (Head of Waste and B3 Management Division, DLH, interview, 2026), a commitment mirrored by waste-bank managers who continue operations despite field-level obstacles: "even though the number of customers sometimes fluctuates, we keep running activities because we see the benefit for the environment and the community" (Waste Bank Manager, interview, 2026). These findings indicate that implementers demonstrate strong commitment to the Community-Based Waste Management Program, reflected in continuous mentoring, manager engagement, and sustained community-facing activity, though the level of community commitment and participation consistency remains variable, requiring continued effort to strengthen environmental awareness and concern.

**7. Supporting and Inhibiting Factors**

Table 5 summarizes the principal factors identified as hindering program implementation, while Table 6 summarizes the principal supporting factors.

**Table 5:** Factors Inhibiting Implementation of the Community-Based Waste Management Program

| No. | Inhibiting Factor | Description |
|---|---|---|
| 1 | Low community awareness and participation in source-level sorting | Segments of the community remain accustomed to conventional, unsorted waste disposal |
| 2 | Limited human resources | The number of mentoring officers, waste-bank managers, and TPS3R managers is not fully proportional to service-area size and community coverage |
| 3 | Uneven facilities and infrastructure | Sorting facilities, processing equipment, operational vehicles, and TPS3R capacity require further strengthening |
| 4 | Cross-sectoral coordination not yet fully optimal | Implementation requires involvement across regional government, districts, kelurahan, waste banks, TPS3R, and the community |
| 5 | Behavioral change requiring sustained time | Building an environmentally conscious culture requires continuous education, mentoring, and accompaniment |

**Source:** Field interviews and observation, compiled by the researcher (2026).

**Table 6:** Factors Supporting Implementation of the Community-Based Waste Management Program

| No. | Supporting Factor | Description |
|---|---|---|
| 1 | Strong regulatory support | Regional Regulation No. 7 of 2021 provides the legal foundation for government, community, and business-sector involvement |
| 2 | Local government commitment | Reflected in mentoring, socialization, institutional strengthening, and facility provision |

| | | |
|---|---|---|
| 3 | Presence of waste banks and TPS3R | Facilities that have developed across various areas of Malang City, supporting sorting, processing, and reduction at the source |
| 4 | Active DLH mentoring and monitoring | Periodic mentoring helps sustain program implementation at the community level |
| 5 | Growing community environmental concern | Rising awareness constitutes important social capital for sustained program success |

**Source:** Field interviews and observation, compiled by the researcher (2026).

## Discussion

### 1. Communication: Reach without Full Uniformity

Read through Edward III's communication variable, DLH has established a functioning, multi-channel socialization and mentoring system reaching waste-bank managers, TPS3R managers, and community members alike, consistent with Edward III's proposition that effective implementation begins with implementers and target groups genuinely understanding what is to be done. The persistence of uneven understanding and participation across areas, however, indicates that communication reach has not yet translated into communication equity, a gap directly relevant to the facility-distribution disparity documented in Table 1: areas with fewer waste-bank and TPS3R units plausibly also receive less frequent, less intensive socialization, compounding rather than offsetting the facility gap.

### 2. Bureaucratic Structure and Resources: A Coordinated but Resource-Constrained System

The bureaucratic-structure findings indicate a reasonably clear division of tasks among DLH, district and kelurahan government, and facility managers, consistent with Edward III's proposition that implementation of a multi-actor policy requires a structure enabling, rather than obstructing, that cooperation. This structural clarity, however, operates under binding resource constraints: informants consistently identified human-resource and facility limitations as constraining full program reach, particularly in the four districts with more limited waste-bank density and the one district (Klojen) without any TPS3R facility at all. This pattern is consistent with Edward III's caution that even well-disposed, well-structured implementation cannot achieve optimal outcomes absent commensurate resource support, and directly explains why the program, though functioning, has not yet reached full territorial equity.

### 3. Disposition: Institutional Commitment amid Variable Community Response

The strong, consistently reported commitment among DLH officials and facility managers, sustained even where community participation fluctuates, reflects the kind of implementer disposition Edward III identifies as essential to policy success. This institutional-level commitment, however, exists alongside acknowledged variability in community-level commitment and behavioral consistency, suggesting that Malang City's implementation challenge lies less in implementer willingness, which appears robust, than in translating that willingness into sustained behavioral change among the broader population the program is meant to serve, a translation problem that resource and communication constraints, discussed above, help to explain.

### 4. Comparison with Prior Studies

These findings both corroborate and extend the prior literature summarized in Table 2. Consistent with Mariane et al. (2025) and Kristiono et al. (2022) [16, 17], inter-actor collaboration and institutional network strength emerge here as central to implementation quality, reflected in Malang City's relatively clear bureaucratic-structure findings. Consistent with Azahra and Riswanda (2025) and Abdillah and Kurniawan (2024) [3, 4], facility limitation and uneven community participation remain persistent constraints even where institutional commitment is strong, a pattern this study's facility-distribution data (Table 1) render especially concrete. Consistent with Puspita et al. (2023) [23], this study confirms that policy implementation meaningfully shapes community participation while socialization and implementation consistency remain areas requiring strengthening. The study extends this literature by applying the Edward III framework specifically to Malang City's post-Regional-Regulation-No.-7-of-2021 [33] context and by directly linking facility-distribution data to communication and resource variable findings, a linkage not made explicit in the comparator studies reviewed.

### 5. Toward Territorial Equity in Community-Based Waste Governance

Taken together, the findings across all four Edward III variables point to a single underlying structural theme: Malang City's community-based waste management program is institutionally sound, backed by clear regulation, committed implementers, and a functioning coordination structure, yet its benefits are not yet distributed evenly across the city's territory. This unevenness is not a failure of any single Edward III variable in isolation; rather, it is the aggregate consequence of facility distribution (resources), socialization reach (communication), and participation consistency (disposition, at the community level) moving together rather than independently. This reading suggests that future policy attention in Malang City, and potentially in comparable Indonesian cities pursuing similar community-based waste strategies, should treat territorial equity as an explicit implementation criterion in its own right, rather than an incidental byproduct of otherwise successful institutional coordination.

## Conclusion

### 1. Summary of Findings

This study examined the implementation of Malang City's Community-Based Waste Management Program under Regional Regulation No. 7 of 2021[33] using George C. Edward III's implementation model. On communication, DLH actively conducts socialization, education, mentoring, and coordination with waste-bank managers, TPS3R managers, and the community, though understanding and participation remain uneven across areas. On bureaucratic structure, implementation involves multiple actors with a relatively clear division of tasks and coordination mechanism, though cross-sectoral coordination requires further strengthening. On resources, the program is supported by human resources, budget, and facilities

including waste banks and TPS3R, though facility distribution remains uneven across the city's five districts and human-resource capacity requires strengthening. On disposition, implementers demonstrate strong, sustained commitment despite variable community-level participation. Inhibiting factors include low community awareness in source-level sorting, limited human resources, uneven facilities, and the continuing need for stronger cross-sectoral coordination, while supporting factors include strong regulatory grounding, local-government commitment, the presence of waste banks and TPS3R, active DLH mentoring, and growing community environmental concern.

**2. Theoretical Implications**

This study reinforces Edward III's proposition that communication, resources, disposition, and bureaucratic structure jointly, rather than independently, determine implementation success, demonstrating a case in which strong institutional disposition and structural clarity coexist with resource and communication gaps that together constrain full program reach. The study further illustrates how facility-distribution data can be integrated with Edward III's communication and resource variables to generate a more spatially grounded diagnostic than qualitative implementer perception alone would provide, an approach with relevance for evaluating similarly structured, facility-dependent community-based programs elsewhere in Indonesia.

**3. Practical Implications**

For the Malang City Environmental Agency, the findings support increasing the intensity of socialization, education, and mentoring more equitably across districts through varied communication media, so that community understanding and participation grow more uniformly. For coordination among DLH, districts, kelurahan, and facility managers, the findings support strengthened synergy so implementation proceeds more effectively, in an integrated manner, and sustainably. For resource development, Malang City is encouraged to continue strengthening human-resource capacity through training and mentoring, alongside more equitable provision of waste-bank and TPS3R facilities, particularly in districts with lower current facility density, especially Klojen's continuing absence of TPS3R coverage. For sustaining implementer commitment, continuous mentoring should be maintained and reinforced through recognition or appreciation for high-performing community groups and managers, to sustain motivation and program continuity. On inhibiting factors, the Malang City Government should develop a strategy addressing community education, additional mentoring personnel, equitable facility distribution, and stronger cross-sectoral coordination, while the supporting factors already in place, regulatory grounding, government commitment, existing facilities, and growing community concern, should be sustained and expanded through broader collaboration with the business sector, educational institutions, and environmental communities.

**4. Limitations of the Study**

This study is subject to several limitations. First, it is confined to Malang City, meaning its findings cannot be generalized to other cities' community-based waste management implementation without further comparative research. Second, the qualitative descriptive design privileges contextual depth over statistical generalization, meaning the patterns identified should be read as context-grounded findings specific to Malang City's institutional and geographic conditions. Third, the study centers on the perspective of implementers and directly engaged community members (waste-bank customers); it does not capture the perspective of non-participating residents, whose non-participation may itself hold diagnostic value for understanding the program's remaining reach gaps.

**5. Recommendations for Future Research**

Future research could extend this study through comparative analysis across multiple cities implementing similar community-based waste management regulations, to determine whether the facility-distribution and communication-equity patterns identified here reflect a broader pattern in Indonesian urban waste governance. Future studies might also examine the perspective of non-participating residents specifically, to better understand the demand-side barriers to community-based waste management uptake that this study's implementer- and participant-centered design could not fully capture.

Taken as a whole, the Malang City case suggests that a community-based waste management policy can achieve strong institutional commitment and reasonably clear coordination while still facing a persistent territorial equity gap in facility distribution and communication reach, underscoring that translating regulatory intent into uniformly experienced community benefit requires deliberate attention to where, not only whether, implementation resources are deployed.

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