



## Effectiveness of the Sukabumi Main Waste Bank (SAMMI) Program on Waste Prevention in Sukabumi City

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### Abstract

Waste management has become a critical environmental issue in many regions, including Sukabumi City. To address this challenge, the Sukabumi City Environmental Agency (DLH) implemented the Sukabumi Main Waste Bank Program (SAMMI) as an effort to reduce waste volume directly at its source. This study was motivated by various challenges in the management of the SAMMI Program that affect its implementation effectiveness. The objective of this research is to analyze the effectiveness of the SAMMI Program in reducing waste in Sukabumi City using Nugroho's Effectiveness Theory which encompasses five dimensions: policy accuracy, implementation accuracy, target accuracy, environmental accuracy, and process accuracy. This study employed a descriptive qualitative method, with data collected through interviews, observations, and documentation. The findings indicate that, in terms of implementation effectiveness, the SAMMI Program is supported by relevant policies, community involvement, and a waste savings system. Stakeholders perceive the program as beneficial in increasing community participation and awareness of waste sorting. However, measurable environmental outcomes remain limited, as city-level waste generation continued to increase. The program's effectiveness has not been fully optimized due to limited waste processing facilities. Strengthening operational facilities, enhancing public education, and expanding partnerships are necessary to improve the program's effectiveness and sustainability.

**Keywords:** *Effectiveness, SAMMI Bank Program, Waste Reduction, Environmental Governance, 3R Practices, Sukabumi City*

### INTRODUCTION

Population growth and shifting consumption patterns have led to increased waste volumes in many urban areas. Waste management has become a critical issue globally, including in Indonesia, where inadequate handling leads to illegal dumping, environmental pollution, and serious public health consequences. In Sukabumi City, waste entering the Cikundul Final Disposal Site (TPA) reaches 180 tons per day, with approximately 60% originating from households and food waste. The TPA, which has a capacity of 9.5 hectares, has been exceeded, now accommodating waste beyond 10.7 hectares.

**Table 1.** Waste Production Data in the City of Sukabumi

Year	Daily Waste Production (Ton)	Annual Waste Production (Ton)
2022	180,35	65.828,41
2023	184,41	67.308,30
2024	186,53	68.081,44

Source: National Waste Management Information System (2022–2024)

Table 1 shows over the past three years, from 2022 to 2024, there has been a consistent

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increase in waste generation, both on a daily and annual basis. As the population grows alongside rapid urbanization, the volume of waste in Sukabumi City is increasing every day. There is a significant annual increase in the amount of waste, while public awareness of waste management remains low.

This condition is in line with [Frans et al. \(2026\)](#) shows that environmental awareness significantly influences green behavior and sustainable practices. Therefore, strengthening environmental literacy and continuous public education is essential to encourage consistent community participation in waste sorting and waste reduction. If this situation does not change, the problem will persist. The increasing waste generation in Sukabumi City reflects the overall municipal solid waste dynamics, which are influenced by population growth, consumption patterns, and urbanization trends. This city-level trend represents the macro condition of waste production that occurs regardless of specific interventions.

In contrast, the SAMMI Program operates as a targeted intervention at the micro level, focusing on household waste reduction through community-based waste bank mechanisms. Therefore, while city-level waste generation represents the aggregate environmental burden, SAMMI-specific contributions are limited to waste sorting, collection, and partial recycling activities within participating communities. Although the Central Waste Bank Program has been implemented in Sukabumi City, data from the table indicates that waste volume has not decreased year over year; in fact, it has tended to increase from 65,828.41 tons in 2022 to 68,081.44 tons in 2024. This indicates the presence of other factors that need to be identified. The City of Sukabumi needs to consider strategic steps to manage the growing volume of waste, including improving waste management infrastructure and promoting stronger environmentally friendly policies. Ineffective waste management occurring in every city in Indonesia prompted the central government to enact Law No. 18 of 2008 on Waste Management

Household waste reduction in Indonesia has been implemented through the 3R approach (Reduce, Reuse, Recycle) since 2012, reinforced by the Minister of Environment Regulation No. 13 of 2012 on Guidelines for 3R Implementation through Waste Banks. In response to escalating waste challenges, the Sukabumi City Government, through the Environmental Agency (DLH), established the Sukabumi Main Waste Bank Program (SAMMI) in 2014, governed by Mayor's Decree No. 213 of 2017 and subsequently updated through DLH Head Decree No. 15 of 2024. The program is guided by Minister of Environment and Forestry Regulation No. 14 of 2021 on Waste Management at Waste Banks.

Despite the program's establishment, waste production data from the National Waste Management Information System shows a consistent upward trend from 65,828.41 tons in 2022 to 68,081.44 tons in 2024. This persistent increase indicates that the SAMMI Program has not yet achieved its intended effectiveness in reducing waste volumes. Operational challenges include limited transportation capacity, insufficient processing facilities (particularly shredding machines and organic waste processing equipment), and low community awareness regarding waste sorting. The Ministry of Environment and Forestry has set a national target of 30% waste reduction by 2025 under the Clean Indonesia 2025 initiative, placing additional pressure on local programs like SAMMI to perform.

Previous research on waste banks in Sukabumi has predominantly focused on Waste Bank Units (BSU) at the community level ([Nugraha et al., 2023](#); [Syahra & Kurniasari, 2025](#)), without examining the Main Waste Bank as the central coordinator. The Main Waste Bank (SAMMI) functions as a central coordination unit that manages, aggregates, and distributes waste collected from various Waste Bank Units (BSUs), which operate at the community level as the primary implementers of household waste sorting and collection. This study therefore fills this research gap by specifically analyzing the effectiveness of the SAMMI Program using [Nugroho \(2020\)](#)

Effectiveness Theory, which encompasses five dimensions: policy accuracy, implementation accuracy, target accuracy, environmental accuracy, and process accuracy. Nugroho's effectiveness framework is appropriate in this study because it emphasizes the evaluation of policy implementation processes through multiple dimensions, rather than focusing solely on final environmental outcomes. This research aims to analyze the effectiveness of the SAMMI Program in reducing waste in Sukabumi City, and identify supporting and inhibiting factors in program implementation.

## **LITERATURE REVIEW**

### **Public Administration**

Public administration, as defined by [Hendrayady \(2023:23\)](#) is the art and science of managing the relationship between an organization and its stakeholders in order to achieve organizational objectives. It involves government processes in organizing and coordinating resources and personnel in implementing public policies as a form of political authority ([Igirisa, 2022](#)). Thus, public administration can be understood as a systematic process carried out by government institutions and stakeholders to achieve public goals through effective and efficient management of resources, activities, and policy implementation.

### **Public Policy**

Public policy according to [Nugroho \(2023:72\)](#) is part of state administration that regulates interactions between government and society, where public administration acts as the executor of policy implementation. In waste management, public policy serves as the foundation for implementing community-based environmental programs such as SAMMI, which operationalizes national waste reduction strategies at the local level. Research on recycling behavior shows that participation in waste sorting is influenced by environmental awareness, economic incentives, and social norms. Studies in developing countries also indicate that financial incentive mechanisms, such as waste banks, can significantly increase household participation in recycling activities, although behavioral consistency remains a challenge. These findings highlight that policy effectiveness is closely linked not only to regulatory design but also to behavioral responses at the community level ([Dewi, 2019](#)).

### **Effectiveness**

Effectiveness, as defined by [Mahmudi \(2010\)](#) refers to the relationship between outputs and objectives, indicating the extent to which a program achieves its intended goals. The greater the contribution of outputs to objectives, the higher the level of program effectiveness.

In this study, [Nugroho \(2020:650\)](#) effectiveness theory is used as an analytical framework to evaluate the SAMMI Program. This framework is not merely conceptual but is operationalized into measurable analytical dimensions that guide data collection and analysis. Each dimension is further translated into observable indicators as follows:

- (1) Policy Accuracy, Observed through alignment between SAMMI policy design and waste management problems in Sukabumi City, regulatory support, and relevance of program objectives to local environmental conditions.
- (2) Implementation Accuracy, Observed through program execution such as waste collection, sorting, weighing, recording systems, collaboration between SAMMI and BSU, and availability of operational infrastructure.
- (3) Target Accuracy, Observed through community participation levels, number of registered users, household involvement in waste sorting, and comparison between planned and actual program reach.

- (4) Environmental Accuracy, Observed through waste generation trends, institutional support, economic fluctuations of waste prices, and community behavior in waste sorting activities.
- (5) Process Accuracy, Observed through policy acceptance, policy adoption, and strategic readiness, analyzed using interview data, observation, and documentation.

Environmental policy implementation literature further suggests that effectiveness depends on institutional capacity, enforcement mechanisms, and stakeholder collaboration. Gaps between policy formulation and implementation are commonly found in environmental governance systems in developing urban contexts.

### **Sukabumi Central Waste Bank Program (SAMMI)**

The SAMMI Program operates as Sukabumi City's central waste bank, functioning as a coordination hub for community-level Waste Bank Units (BSU). A waste bank is a facility based on the 3R principles (Reduce, Reuse, Recycle) with economic value as regulated in Minister of Environment Regulation No. 13 of 2012. SAMMI provides services including waste collection, weighing, sorting, and conversion of waste into savings for registered customers, supported by free pickup services. Unlike BSUs operating at the RT/RW or village level, SAMMI covers the entire city area and provides guidance and socialization to all BSUs. Community participation is a key determinant in sustainable waste management systems. International literature emphasizes that participation is strengthened through awareness campaigns, economic incentives, and participatory governance structures, particularly in decentralized waste systems. In this context, SAMMI represents a local adaptation of global waste governance and community-based recycling models, integrating institutional coordination with community participation in a city-level system.

Four prior studies inform this research. [Nugraha et al. \(2023\)](#) found that BSU programs increase community participation in waste sorting but face infrastructure limitations. [Syahra & Kurniasari \(2025\)](#) identified transportation and human resource constraints in BSU Mandiri. [Kurniawan \(2024\)](#) found limited waste reduction impact in waste bank implementation and emphasized infrastructure improvement. [Jonoaji et al. \(2025\)](#) showed that appropriate technology such as screw press machines improves operational efficiency. Collectively, these studies indicate that previous research has focused on BSU-level implementation and has not examined SAMMI as a centralized coordination system. Infrastructure limitations remain a consistent barrier to effectiveness.

### **Waste Prevention**

Presidential Regulation of the Republic of Indonesia No. 18 of 2008 about [Waste Management \(2008\)](#) states that waste management is a systematic, comprehensive, and sustainable activity that includes waste reduction, reuse, and recycling. Waste reduction includes limiting waste generation, reuse, and recycling activities. Common challenges include community behavior, limited resources, and infrastructure constraints. [Kahfi \(2017\)](#) notes that waste accumulation remains a major environmental issue in urban areas. International studies on waste governance further emphasize that effective waste management requires multi-level coordination among government institutions, private actors, and communities, where integrated governance is essential to reduce landfill dependency in rapidly urbanizing cities.

### **RESEARCH METHOD**

This study employed a descriptive qualitative approach, appropriate for examining phenomena in depth within their natural context ([Sugiyono, 2022](#); [Creswell, 2018](#)). The researcher acted as the primary instrument for data collection and analysis, using an inductive approach to understand meanings and explore the characteristics of program effectiveness.

The unit of analysis in this study consists of three components. First, the place component, which refers to the Sukabumi Central Waste Bank Office as the main location where research activities were conducted. Second, the actor component, which includes stakeholders involved in the SAMMI Program, namely the Director of Bank SAMMI, general and finance staff, and community members who actively use and benefit from the program. Third, the activity component, which refers to the implementation of SAMMI Program activities in addressing waste management issues in Sukabumi City.

The research was conducted at the Sukabumi Main Waste Bank (Bank SAMMI), located at Jl. Pramuka No. 19, Citamiang, Sukabumi City, West Java. Informants were selected using purposive sampling to ensure relevance and depth of information. Three categories of informants were included, as shown below:

**Table 2.** Research Informant Settings

No	Informant	Role/Reason
1	Director, Bank SAMMI	Program manager responsible for overall implementation
2	General & Finance Manager	Responsible for administration, coordination, and operational supervision
3	Community Members	Program users and direct beneficiaries of SAMMI services

Data were collected using three main techniques: (1) direct observation at Bank SAMMI; (2) semi-structured in-depth interviews with all categories of informants, with each interview lasting approximately 30–60 minutes; and (3) document analysis, including operational records, regulations, and administrative reports. Data validity was ensured through triangulation, including source triangulation (cross-checking information across informants) and technique triangulation (comparing interview data with observations and documents). Data analysis followed Miles and Huberman’s interactive model, consisting of data collection, data reduction, data display, and conclusion drawing/verification. After the initial analysis process using Miles and Huberman’s interactive model, the findings were further interpreted using Nugroho’s effectiveness framework. Miles and Huberman’s model was used to organize and simplify raw qualitative data, while Nugroho’s framework served as an analytical lens to categorize findings into five dimensions: policy accuracy, implementation accuracy, target accuracy, environmental accuracy, and process accuracy. This integration ensured that the analysis was both systematically structured and theoretically grounded.

In addition, coding was conducted to identify key themes, including implementation effectiveness, stakeholder participation, operational constraints, and environmental outcomes. Ethical considerations were applied in this study to ensure the integrity of the research process. All participants were informed about the purpose of the study and provided their voluntary consent before data collection. Confidentiality and anonymity of informants were maintained throughout the research process by ensuring that personal identities were not disclosed in the reporting of findings. Participation in this study was entirely voluntary, and respondents had the right to withdraw at any stage without any consequences. The data collected were used solely for academic research purposes.

## **FINDINGS AND DISCUSSION**

Bank SAMMI was established in 2014 in response to growing waste challenges in Sukabumi City, where the TPA Cikundul had exceeded its 9.5-hectare capacity. The program currently

coordinates 8 Waste Bank Units (BSU) spread across multiple sub-districts, creating a hierarchical waste management network. Services include free waste pickup, weighing, sorting, and conversion of sorted waste into monetary savings for registered customers through a digital savings application. Waste types accepted include plastics, bottles, packaging, metals, glass, paper, and used cooking oil (*jelantah*).

### **Policy Accuracy**

The findings show that SAMMI has a strong policy foundation supported by national and local regulations. This is confirmed by Informant 1:

*“The SAMMI program is implemented in accordance with the Environmental Agency's policies and the applicable 3R (Reduce, Reuse, Recycle) regulations, ensuring that its implementation follows government guidelines.”* - Informant 1

The SAMMI Program demonstrates strong policy accuracy. Its legal foundation aligns with multiple regulations: Law No. 18 of 2008 on Waste Management, Ministerial Regulation No. 14 of 2021 on Waste Management at Waste Banks, Sukabumi City Regional Regulation No. 2 of 2021 on Waste Management, and Mayor's Decree No. 213 of 2017 establishing SAMMI. The program's design directly addresses the identified problems of increasing waste volumes and low community awareness through 3R principles and economic incentivization.

Interview findings confirmed that the program was designed with awareness of local conditions. Informant 1 stated that the policy has been adapted to Sukabumi's specific waste challenges, processing waste directly from the source and providing economic benefits to the community. Socialization activities targeting schools and government offices also demonstrate alignment between policy design and the identified gap in community awareness. However, implementation has not been fully optimal due to infrastructure limitations, revealing a gap between policy design and on-the-ground execution.

### **Implementation Accuracy**

Implementation involves collaboration between DLH, SAMMI, BSU, and the community through structured procedures: registration, collection, sorting, weighing, recording, and distribution. The program also employs a monitoring mechanism through six-monthly Quality Performance Indicator (QPI) reports to the DLH head, with a monthly target of two new partnership establishments. Informant 2 stated:

*“We collect recyclable waste directly from residents' households, after which it is sorted, weighed, and recorded as savings.”* - Informant 2

However, operational constraints significantly limit implementation effectiveness. Informant 1 noted critical difficulty in processing organic waste, which constitutes approximately 45% of all waste received, due to the absence of organic waste processing facilities. Informant 2 confirmed the absence of shredding machines, meaning most waste is sent directly to collectors without value-added processing. As shown in Table 3, key facilities including a shredding machine and organic waste recycling equipment remain unavailable, constraining the program's processing capacity to predominantly inorganic waste streams. This condition is consistent with [Mankgele \(2025\)](#), who explains that the effectiveness of sustainability initiatives is closely related to the adoption of green technology, knowledge sharing, and regulatory support. Therefore, the absence of adequate processing technology may limit the ability of waste bank programs to achieve optimal waste

reduction outcomes.

**Table 3.** Operational Facilities of Bank SAMMI

No	Informant	Role/Reason	Notes
1	Waste Motorcycle	Available	Small-scale transport
2	Waste Truck	Available	Large-scale transport
3	Scale/Weighing Equipment	Available	For waste weighing
4	Waste Storage Warehouse	Available	Pre-processing holding
5	Shredding Machine	Not Yet Available	Processing capacity limited
6	Organic Waste Recycling Tool	Not Yet Available	Organic waste unprocessed

### Target Accuracy

The SAMMI Program's targets are broadly appropriate, focusing on increasing community participation in waste management and reducing TPA-bound waste through 3R principles.

The program targets households as the main source of waste generation and has increased community participation. The economic incentive system, converting sorted waste into monetary savings, has proven effective in motivating community engagement. Informant 3 explained:

*"At present, approximately 100 households are actively participating in the waste bank program by regularly depositing recyclable waste."* - Informant 3

However, overall targets have not been fully achieved. While customer participation has grown, waste volumes at the city level have continued to increase from 67.308.30 tons in 2023 to 69.496.13 tons in 2025, indicating that the program's reach remains insufficient to offset broader waste generation trends. Infrastructure limitations continue to constrain the program's ability to achieve the 30% national waste reduction target. The organic waste processing gap is particularly significant given that such waste constitutes the majority of household waste produced.

### Environmental Accuracy

Institutional support for SAMMI is well-established. The program coordinates with 8 active BSUs, conducts regular socialization activities targeting schools and private organizations, and maintains an active social media presence (@banksampahinduksukabumi on Instagram) to raise public awareness. The recent adoption of a digital savings application (Tradisi) reflects the program's adaptation to contemporary communication and financial management practices.

Despite these strengths, several environmental constraints continue to influence program effectiveness. Informant 2 stated that:

*"Community participation generally declines when the market price of recyclable waste decreases."* - Informant 2

This indicates that fluctuations in waste prices directly affect community motivation to participate in waste management activities. In addition, extreme weather conditions affect waste weighing and collection processes, while inconsistent waste-sorting behavior among community members remains a persistent challenge. These conditions suggest that although institutional support is strong, the socio-economic environment has not yet fully supported optimal program implementation.

### **Process Accuracy**

The stages of public policy implementation are generally divided into three: policy acceptance, policy adoption, and strategic readiness. Policy acceptance refers to the initial stage in which both government and community begin to recognize the policy as an important regulatory framework that guides future actions. Informant 1 stated that:

*“Outreach activities are conducted in schools and communities to provide a clear understanding of the program before encouraging participation.”* - Informant 1

Within the SAMMI Program, this stage is reflected in planning activities involving the Environmental Agency and Bank SAMMI management, as well as the formation of organizational structures that define roles and responsibilities in implementation. At this stage, community involvement is still limited, primarily involving volunteers who are beginning to understand their roles in supporting program implementation.

The policy adoption phase is marked by the policy's acceptance as a shared guideline and its implementation in daily life. In the Bank SAMMI Program, this phase is evident in the increased effectiveness of program implementation through the establishment of Waste Bank Units (WBUs), which has led to an increase in the volume of managed waste. Interview results also indicate an increase in public awareness regarding waste sorting. This is further reinforced by changes in public behavior as people begin to incorporate waste management into their daily lives, such as sorting waste, making trash bins from recycled materials, creating crafts from plastic, and engaging in ecobrick activities. Furthermore, the policy has been effectively adopted in the community's behavior. The Bank SAMMI Program has begun to be effectively implemented by the community through behavioral changes and increased participation in waste management, as evidenced by the rising volume of managed waste and the emergence of waste management habits in daily life.

The strategic readiness phase is the final stage in policy implementation, during which the program is ready to be operationally implemented through the readiness of implementers and active community participation. In the Bank SAMMI Program, this phase is demonstrated through the implementation of outreach activities deemed effective, which are then followed by the establishment of Waste Bank Units (BSU) in various regions. Furthermore, program implementation continues with on-site technical assistance, such as weighing, recording, and sorting waste. This demonstrates that program implementers have achieved operational readiness to carry out their duties directly within the community. Bank SAMMI's outreach activities are followed by guidance on establishing BSU units and the technical processes of waste management. Bank SAMMI also utilizes the social media platform Instagram as a means of disseminating program information. Social media can serve as a key tool for expanding the reach of service information, particularly for communities not yet reached by direct outreach activities. From the community's perspective, strategic readiness is also evident through the involvement of young volunteers assisting with operational activities. This indicates that community participation is beginning to grow as part of the support for the program's sustainability.

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## Discussion

The findings indicate that the SAMMI Program is generally effective in promoting community-based waste management in Sukabumi City. This is evident from policy alignment, increasing participation, and the development of a structured waste management system. However, the effectiveness remains limited due to infrastructure constraints, inconsistent community behavior, and external environmental factors.

In terms of policy accuracy, SAMMI aligns with national and local regulations, confirming that policy design is appropriate for addressing urban waste problems. However, as highlighted by [Kurniawan \(2024\)](#), policy effectiveness is often constrained by limited supporting infrastructure, which is also evident in this study. Regarding implementation accuracy, the structured waste management process demonstrates strong organizational coordination. However, the absence of key facilities such as shredding machines and organic waste processors limits operational effectiveness. This finding is consistent with [Jonoadji et al. \(2025\)](#), who emphasize the importance of supporting infrastructure in improving waste bank performance.

In target accuracy, Bank SAMMI program has successfully targeted the right group—households—as the primary source of waste generation. The program also involves schools, communities, and civil society organizations as part of efforts to expand participation in waste management. Research findings indicate that the program's targets are beginning to be met, as evidenced by the increasing number of participants and public engagement in waste sorting. However, some members of the public remain inconsistent in sorting their waste, and processing capacity is insufficient to handle all incoming waste. This situation suggests that while the program's targets are well-defined, their achievement has not yet reached its full potential. These findings align with the results of a study by [Nugraha et al. \(2023\)](#) that waste bank programs are effective in increasing community participation in waste sorting and have a positive impact on reducing the volume of waste disposed of at Landfills (TPA).

In environmental accuracy, the implementation of Bank SAMMI Program is influenced by both internal and external environmental conditions. From an institutional perspective, the program has established partnerships with various stakeholders, such as Waste Banks (BSU), waste collectors, schools, and private organizations. This collaboration serves as a key enabler in

expanding the program's reach. This condition is consistent with [Mankgele \(2025\)](#), who explains that the effectiveness of sustainability initiatives is closely related to the adoption of green technology, knowledge sharing, and regulatory support. Therefore, the absence of adequate processing technology may limit the ability of waste bank programs to achieve optimal waste reduction outcomes. This finding is supported by [Buasan et al. \(2026\)](#) who emphasize that multi-stakeholder collaboration plays an important role in strengthening program implementation because local communities, government, and supporting institutions contribute to achieving policy outcomes. In the context of Bank SAMMI, collaboration among DLH, BSU, schools, private organizations, waste collectors, and community members is essential to expand program coverage and strengthen waste reduction efforts. Externally, several challenges remain, such as waste selling prices that affect community motivation, weather conditions that can disrupt operations, and community habits that are not yet fully consistent in waste sorting. These conditions indicate that the program's implementation environment is not yet fully conducive, thereby continuing to impact the effectiveness of implementation.

In process accuracy, the implementation of Bank SAMMI Program has proceeded through three main stages: policy acceptance, policy adoption, and strategic readiness. During the acceptance stage, the policy began to be understood through a planning process that involved local governments and aligned with national policies. During the adoption stage, the community begins to accept and implement the policy through the establishment of Waste Banks and behavioral changes in waste management. Meanwhile, in the strategic readiness stage, the program has been supported by outreach activities, technical assistance, and the use of social media to disseminate information. However, outreach efforts have not yet been fully optimized as they still rely on invitations from external parties, resulting in uneven coverage. Additionally, limited infrastructure and facilities are major factors hindering the optimization of the implementation process. This situation indicates that, procedurally, the program is progressing according to its stages; however, challenges remain in optimizing its implementation.

This situation explains why Bank SAMMI has been able to encourage greater community participation in waste management and support waste reduction at the community level, yet has not yet been able to have a significant impact on reducing waste volume on a broad scale in the city of Sukabumi. In other words, the main issue is not that in "ineffective," but rather that in "not yet optimal and not fully integrated."

From the perspective of [Nugroho \(2020\)](#) theory of effectiveness, the findings of this study essentially support the theory, as all dimensions of effectiveness have been shown to play a role in determining the success of the Bank SAMMI Program. However, this study also indicates that a program's effectiveness is not determined solely by the strength of each dimension in isolation, but also by the interconnectedness and continuous reinforcement among these dimensions. Thus, the effectiveness of the Sukabumi Central Waste Bank Program (Bank SAMMI) can be said to be moving in the right direction, but it still requires strengthening in the areas of expanding community participation, developing facilities and infrastructure, optimizing waste processing, and enhancing coordination and public outreach to make a more significant contribution to waste reduction in the City of Sukabumi.

Bank SAMMI program has led to increased community participation in source-separated waste management. This is evident in the growing practice of sorting household waste, the rising number of waste bank customers, and community involvement in 3R activities (*reduce, reuse, recycle*). These developments indicate that Bank SAMMI is quite effective in raising public awareness about waste management. Furthermore, this program contributes to reducing the volume of waste entering the Final Disposal Site (FDS), although the reduction is not yet significant. This is due to insufficient waste management capacity, limited facilities and infrastructure, and

uneven community participation. Finally, the Bank SAMMI program generates microeconomic benefits for the community through the waste savings system. This situation indicates that waste is not merely viewed as refuse but also as a source of economic value that can be harnessed. This impact helps boost community motivation to participate in waste management. However, the economic value generated remains relatively limited due to constraints in further processing, meaning the value added from recycled materials is not yet optimal.

## CONCLUSIONS

This study analyzed the effectiveness of the SAMMI Program using Nugroho's (2020) five-dimensional effectiveness theory. The findings indicate that the program demonstrates partial effectiveness across the five dimensions, with varying levels of achievement. The program has strong legal foundations and is designed to address identified waste management challenges through the 3R principles. However, implementation gaps persist due to infrastructure limitations. Implementation follows established SOPs with government-community collaboration, but is significantly constrained by the absence of shredding machines and organic waste processing facilities, limiting processing to predominantly inorganic waste. Targets are appropriate, and community participation is growing, but city-level waste volumes continue to increase, indicating that program scale remains insufficient to achieve the national 30% waste reduction target. Institutional support from BSU networks and socialization activities is well-established, but environmental constraints, including weather, price fluctuations, and inconsistent sorting habits, limit program optimization. Policy acceptance, adoption, and strategic readiness are evidenced through growing participation and structured processes, but the absence of key processing equipment prevents complete 3R cycle implementation.

These findings contribute to the literature on waste bank program evaluation in Indonesian cities by demonstrating that policy design adequacy alone is insufficient for effectiveness—operational infrastructure constitutes a critical determinant of program outcomes. Future research should apply quantitative methods to measure specific waste reduction percentages and community participation rates, enabling more precise effectiveness assessment.

## LIMITATION & FURTHER RESEARCH

This study is limited by its qualitative single-case design, which restricts the generalizability of the findings to other waste bank programs in different contexts. In addition, the research was conducted within a specific operational period; therefore, longitudinal changes in program effectiveness could not be fully captured. Furthermore, the available data on waste generation represent city-level aggregates rather than SAMMI-specific performance indicators, making precise attribution of waste reduction outcomes to the program challenging.

Future research is recommended to address these limitations by adopting a mixed-methods approach that integrates qualitative insights with quantitative measurements of waste reduction performance. Comparative studies across multiple waste bank programs in different cities are also encouraged to identify contextual variations, best practices, and implementation gaps. In addition, future studies should examine the impact of organic waste processing facilities on program effectiveness, as well as explore the role of digital technology adoption in improving operational efficiency, data management, and community participation in waste bank systems.

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