

Strengthening Agile Governance through Waste Management SOP Development and Education in Paminggir Village, Garut Regency

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Penguatan Tata Kelola Pemerintahan Gesit melalui Penyusunan SOP dan Edukasi Pengelolaan Persampahan di Kelurahan Paminggir, Kabupaten Garut

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Abstract

Paminggir Village, Garut City District, is a densely populated area prone to flooding due to the accumulation of waste in the Cimanuk River and drainage channels. This problem is exacerbated by limited waste transportation capacity, low public awareness of household waste management, and the absence of standardized Standard Operating Procedures (SOPs) at the village level. The Community Service Program aims to provide comprehensive solutions thru the preparation of SOP documents and education on waste sorting. The methods used include focus group discussions (FGDs), the preparation of Standard Operating Procedures (SOPs) for waste management, and education on the importance of waste management. The results of the activity show an increase in the capacity of village officials, RWs, RTs, and the community in designing technical regulations, as well as an increase in residents' awareness of waste sorting. In conclusion, this PKM program successfully had a positive impact both physically and socially, and built an institutional foundation for the sustainability of community-based waste management in Paminggir Village.

Keywords

Standard Operating Procedure (SOP); waste management; community participation; Agile Governance.



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Abstrak

Kelurahan Paminggir, Kecamatan Garut Kota, merupakan wilayah padat penduduk yang rentan banjir akibat menumpuknya sampah di aliran Sungai Cimanuk dan saluran drainase. Permasalahan ini diperburuk oleh terbatasnya kapasitas pengangkutan sampah, rendahnya kesadaran masyarakat dalam pengelolaan limbah rumah tangga, serta ketiadaan Standar Operasional Prosedur (SOP) yang baku di tingkat kelurahan. Program Pengabdian kepada Masyarakat bertujuan untuk memberikan solusi komprehensif melalui penyusunan dokumen SOP dan edukasi pemilahan sampah. Metode yang digunakan meliputi focus group discussion (FGD), penyusunan Standar Operasional Prosedur (SOP) Pengelolaan Persampahan dan edukasi pentingnya pengelolaan persampahan. Hasil kegiatan menunjukkan adanya peningkatan kapasitas aparat kelurahan, RW, RT, dan masyarakat dalam merancang aturan teknis serta meningkatnya kesadaran warga dalam pemilahan sampah. Kesimpulannya, program PKM ini berhasil memberikan dampak positif baik secara fisik maupun sosial serta membangun fondasi kelembagaan untuk keberlanjutan pengelolaan sampah berbasis komunitas di Kelurahan Paminggir.

Kata Kunci

Standar Operasional Prosedur (SOP), Pengelolaan Sampah, Partisipasi Masyarakat, Tata Kelola Pemerintahan Gesit.

1. Introduction

Paminggir Village is one of the administrative areas located in Garut Regency, West Java. Geographically, this area is close to the Cimanuk River, the biggest and most important river in Garut, and it is located in a highly populous and crucial area. The community benefits from the river's existence in terms of transportation, irrigation, and raw water sources, but it also presents a significant risk to the environment and the health of the locals, particularly in the form of flooding.

Floods that often occur in Paminggir Village are not just caused by high rainfall intensity, but are the result of an accumulation of various factors, including damage to the river ecosystem, land-use changes, and weak waste management systems. One of the main causes of flooding is blocked water channels due to piled-up trash, especially in densely populated areas and along the Cimanuk River banks. Poorly managed waste, particularly plastic, food leftovers, and other household waste, is often thrown carelessly into the river or drains, which eventually clogs the water flow and worsens the flood intensity during heavy rain.

In practice, the waste management system in Paminggir Village remains limited. Although the Garut Regency Environmental Agency (DLH) regularly conducts waste collection activities, its operational capacity is insufficient to accommodate the total volume of waste generated each day. According to Citarum Harum (2024), waste generation in Garut Regency reaches approximately 1,200 tons per day, whereas the capacity of the Garut Regency Environmental Agency to transport waste to the final disposal site (Tempat Pembuangan Akhir/TPA) is

estimated at only 250 tons per day. This substantial gap between waste generation and transportation capacity indicates that a significant proportion of waste remains uncollected and may be disposed of through uncontrolled dumping, potentially contributing to environmental pollution. These conditions highlight the need for stronger community-based waste management mechanisms at the village level, supported by clear operational procedures and active community participation.

This aligns with an official report stating that Garut Regency is still lacking more than 700 garbage trucks from the ideal need of around 900 units, while only about 200 are available. This situation makes waste collection uneven, leaving many areas unserved. Based on this background, community-led ditch cleaning activities have become one of the most concrete steps to restore drainage function while also boosting collective awareness.

This situation is further exacerbated by limited community awareness of the importance of managing waste at its source. Some residents continue to dispose of waste indiscriminately, including into rivers, drainage channels, and vacant areas. In addition, inadequate waste management facilities and infrastructure, such as insufficient temporary waste collection points (Tempat Penampungan Sementara/TPS), limited waste collection vehicles, and insufficient public education on waste sorting and recycling, further constrain the effectiveness of waste management practices. The combination of low community awareness and limited institutional and infrastructural capacity highlights the need for a more systematic and participatory approach to waste management at the village level.

Waste accumulation not only contributes to flooding but also generates a range of environmental and public health problems (Waruwu, 2007). Unmanaged waste can contaminate air, water, and soil, thereby degrading environmental quality and potentially affecting community well-being. The decomposition of organic waste under anaerobic conditions can also produce methane (CH₄), a potent greenhouse gas that contributes to global warming. Meanwhile, plastic waste can degrade into microplastics that may enter aquatic and terrestrial food chains, raising concerns about their potential impacts on human health. The World Health Organization (WHO, 2024) further notes that inadequate solid waste management can increase exposure to health risks and contribute to conditions that facilitate the transmission of infectious diseases, particularly in densely populated and flood-prone areas. These environmental and health impacts underscore the importance of strengthening waste management practices through source-level waste reduction, proper sorting, collection, and environmentally sound waste processing.

The World Bank claims that the advantages of investing in effective waste management outweigh the expenses. Research reveals that the effect costs of uncontrolled garbage, including economic losses from floods, infrastructure damage, and health expenditures, far surpass the cost of investing in a proper waste management system from the outset (World Bank, 2025)

The issue of waste management extends beyond environmental concerns to encompass significant social and aesthetic dimensions. Unclean and unpleasant-smelling surroundings can diminish residents' comfort in their daily activities, reduce the aesthetic quality of urban areas, and interfere with social interactions within communities. Over time, persistent waste-related problems may contribute to the weakening of social cohesion and a decline in overall quality of life. Such conditions have been observed in several communities across Garut Regency, where inadequate waste management has affected both the physical environment and the social well-being of local residents.

At the district level, waste management continues to face substantial challenges, despite efforts by several local governments to address these issues through community-based interventions. Paminggir Village, for

instance, has undertaken local initiatives aimed at strengthening waste management practices within the community. As the frontline actors in policy implementation, villages and local communities play a crucial role in translating government policies into practical actions and fostering behavioural and social norm changes related to waste management. Moreover, the strategies adopted by local governments to engage communities in the transition toward low-waste practices have important implications for social justice, particularly in ensuring equitable participation and access to environmental benefits and responsibilities (Lane et al., 2024).

Table 1 provides a comparative overview of waste management conditions at the macro level in Garut Regency and the concrete efforts undertaken at the village level to address these challenges.

Table 1. A Quick Comparison Between Macro Issues in the District and Local Achievements in Paminggir Village

No	Macro Indicators	Actual Condition	Achievement Indicators
1	Waste generation 230 tons/day	33% formally handled	Local initiatives minimize local clutter
2	Spike during Eid al-Fitr up to 245 tons	Limited fleet capacity	Cleaner environment at the community level
3	Low formal participation rate	Waste banks haven't spread yet	An educational approach boosts participation
4	The drainage tends to get clogged	Unsafe drainage	Community work and maintenance by residents

Source: processed by the author, 2025

Garut Regency generates approximately 350 tons of waste per day; however, the Environmental Agency (DLH) provides waste collection services to only 10 of the 42 districts (Pundenswari et al., 2023). Consequently, approximately 70 percent of the waste remains uncollected and is reportedly disposed of in rivers and ravines or burned by residents, largely due to limited transportation capacity and inadequate waste

management infrastructure. Furthermore, the waste management and reduction performance of Garut DLH reached only 30 percent in 2024, representing an increase from approximately 25 percent during 2020–2021 (Kusnadi & Risal, 2024).

Waste management is not exclusively the responsibility of the government or the Environmental Agency (DLHK), but constitutes a collective responsibility involving all members of society. This principle is reflected in Garut Regency Regional Regulation Number 4 of 2014 concerning the Management of Household Waste and Household-Like Waste. Article 18 paragraph (1) stipulates that every individual is obliged to reduce and sort waste at its source. In addition, Article 20 underscores the importance of community participation through neighbourhood units (RT and RW) and village governments in independently organizing waste management at the local community level. These provisions indicate that effective waste management requires active collaboration between government institutions and the community, particularly through waste reduction, source-level sorting, and community-based management.

The implementation of Garut Regency Regional Regulation Number 4 of 2014 concerning the Management of Household Waste and Household-Like Waste remains suboptimal. This condition is reflected in the limited public understanding of the roles and responsibilities of community members in managing waste. Therefore, the implementation of the regulation needs to be strengthened through the application of the zero waste principle, which emphasizes that waste should not merely be regarded as material to be discarded, but as a potential resource that can be retained within the production and consumption cycle. In practice, this principle can be implemented through a waste management hierarchy encompassing waste avoidance, reduction, reuse, and recycling (Riyanto et al., 2026). Such an approach places waste prevention and resource recovery at the center of community-based waste management.

Waste banks constitute an important component of community-based waste management systems because they contribute not only to reducing the volume of waste but also to generating economic value for local communities. The establishment and operation of waste banks can be understood as a form of social

engineering designed to encourage behavioral changes in waste management, particularly in the practice of waste sorting at the household level. By assigning economic value to waste and treating recyclable materials as assets that can be collected and deposited, waste banks encourage communities to recognize differences in waste types and their respective economic values. This mechanism can foster greater public awareness and willingness to separate waste according to its characteristics, thereby supporting more sustainable waste management practices (Saputro et al., 2015).

The absence of standardized technical guidelines at the village level has contributed to inconsistencies in the implementation of waste management practices and has made it difficult to establish measurable outcomes (Kasi et al., 2024). Nevertheless, the establishment of waste banks alone cannot adequately address the complexity of waste management challenges. Their effectiveness requires integration into a structured, systematic, and comprehensive waste management framework that encompasses waste reduction, sorting, collection, transportation, processing, and final disposal, supported by clear institutional arrangements and community participation.

A fundamental challenge in the implementation of waste management at the village level is the absence of standardized technical guidelines that can serve as a common reference for waste management practices. This condition may result in inconsistent implementation and make the performance of waste management activities difficult to measure systematically. In several villages, including Paminggir, the absence of a clearly established Standard Operating Procedure (SOP) has resulted in the lack of a well-defined waste management flow, beginning with household-level waste sorting and continuing through collection, transportation, processing, and final disposal. Without clear operational procedures, waste management activities tend to be reactive and fragmented, relying heavily on the initiative of individual personnel rather than operating within an integrated institutional framework. Such conditions may contribute to disparities in service provision, operational inefficiency, and difficulties in maintaining sustainable environmental cleanliness at the village level.

Addressing these challenges requires a systematic and planned approach through the development and implementation of a Standard Operating Procedure (SOP) for waste management in Paminggir Subdistrict. The SOP should not be viewed merely as an administrative instrument, but as a strategic governance mechanism for establishing a holistic, participatory, and sustainable waste management system. In the context of public administration, effective, efficient, transparent, and accountable public services constitute important elements of good governance. Accordingly, the SOP can provide a standardized framework to ensure that waste management services are implemented consistently, systematically, measurably, and in accordance with applicable laws and regulations.

The implementation of a comprehensive waste management SOP also provides an opportunity for Paminggir Subdistrict to strengthen community-based environmental governance. By clearly defining procedures, responsibilities, service standards, and the roles of relevant stakeholders, the SOP can support greater coordination between local government, community members, and other actors involved in waste management. Such an approach may contribute not only to addressing environmental challenges but also to improving the quality, equity, and sustainability of public services. In the longer term, the implementation of a well-structured SOP has the potential to support Paminggir Subdistrict as an example of community-based waste management and contribute to improving the quality of life and environmental health of communities in Garut Regency, in line with the broader objective of promoting a healthy living environment.

Waste management education can emphasize the importance of separating inorganic waste at the source through the development of waste banks, particularly by highlighting the potential economic value of recyclable materials. This approach not only promotes greater community awareness and participation in waste sorting but also supports the principles of a circular economy by transforming waste into economically valuable resources. Furthermore, circular economy initiatives in waste management can generate broader socioeconomic benefits, including employment opportunities and the development of micro and small enterprises. Hasse and Moreno-Ríos (2025) report that such initiatives have the potential to

create more than 60 employment opportunities within micro and small business activities.

2. Methods

The community service program will be implemented through three main activities: (1) a Focus Group Discussion (FGD), (2) the development of a Standard Operating Procedure (SOP) for waste management, and (3) an educational and socialization activity aimed at introducing the SOP and identifying practical solutions to existing waste management challenges. These activities are designed to involve key stakeholders, including policymakers, policy implementers, and community beneficiaries. A total of 30 participants will be involved in the community service program, comprising:

- 1) The sub-district head and the officials that involved in environmental management and cleanliness; Neighborhood Unit Head dan Community Unit Head;
- 2) Community, Religious, and Youth Leaders, also Environmental Care Groups;
- 3) The security elements represented by the Babinkamtibmas and Babinsa;
- 4) Residents of Paminggir Village; and
- 5) Field officers and garbage collectors from both the urban village side and community self-help groups.

The active involvement of the five stakeholder groups was demonstrated through a series of interactive dialogues and workshops conducted throughout the SOP development process. One of the principal activities was a participatory dialogue designed to provide stakeholders with an opportunity to articulate local needs, identify challenges encountered in waste management, and collaboratively formulate appropriate solutions. This participatory approach ensured that the development of the SOP was grounded in the conditions, experiences, and expectations of the local community. Figure 1 illustrates the active participation of representatives from various stakeholder groups during the dialogue and discussion sessions.



Source: author documentation, 2025

Figure 1. Participants of the Community Service Activity (PkM) during the dialogue

Figure 1 illustrates the participatory dialogue conducted with various stakeholders in Paminggir Village. The participants represented diverse backgrounds and stakeholder groups, creating a forum for inclusive discussion on local waste management issues. The dialogue was conducted interactively and openly, allowing participants to articulate their perspectives, experiences, concerns, and needs regarding waste management practices in their community.

The exchange of information and ideas during the dialogue provided an important foundation for developing a waste management SOP that considers not only technical requirements but also the local social, cultural, and economic context. Through this participatory process, the community service team obtained valuable input from stakeholders regarding existing practices, operational constraints, and potential solutions. These inputs subsequently served as important considerations in formulating an SOP that is contextually relevant, practically applicable, and oriented toward sustainable waste management. The outcomes of the participatory dialogue and their implications for the development of the SOP are discussed further in the Results and Discussion section.

3. Results and Discussion

The community service program entitled “From Clogged Drains to Healthy Living,” conducted in Paminggir Village, Garut Regency, revealed the interconnectedness between local environmental conditions and broader structural challenges in waste

management within the regency. The activity received a positive response from the village government and was supported by the active involvement of various local stakeholders. The program commenced with an introductory session and a coordination meeting involving the Subdistrict Head, Subdistrict Secretary, and other subdistrict officials. The presence of security and community protection personnel, represented by Bhabinkamtibmas and Babinsa, further demonstrated the collaborative commitment of government institutions and relevant stakeholders to supporting the implementation of the program.

In addition to government and security representatives, the activity involved various community representatives, including RT and RW administrators, village cadres, community leaders, and members of local waste management groups. Their participation provided an important platform for discussing existing waste management practices, identifying challenges at the community level, and exploring potential solutions collectively. The involvement of these diverse stakeholders illustrates the importance of cross-sectoral collaboration and community participation in establishing a structured and sustainable waste management system at the village level. Thus, the program served not only as an educational activity but also as a forum for strengthening coordination among stakeholders in addressing local environmental and waste management challenges. The participatory process increased participants’ awareness of the importance of establishing Standard Operating Procedures (SOPs) at both the village and RT/RW levels. Such SOPs are considered essential for addressing gaps in the existing waste management system by providing clear internal regulations that define the roles, responsibilities, procedures, and coordination mechanisms of community members and relevant stakeholders. The establishment of these operational guidelines is therefore expected to promote greater consistency, accountability, and effectiveness in the implementation of waste management activities at the local level.

In the initial stage of the activity, the community service team presented an overview of the current waste management conditions in Garut Regency. The presentation was intended to provide participants with a broader understanding of waste management challenges and to demonstrate that waste-related problems cannot be attributed solely to individual community behavior, but are also associated with

structural and institutional weaknesses within the existing management system. This discussion encouraged participants to recognize the importance of establishing Standard Operating Procedures (SOPs) at both the village and neighborhood (RT/RW) levels as an instrument for addressing gaps in the waste management system. Such SOPs can provide clear internal regulations concerning the roles, responsibilities, procedures, and coordination mechanisms of community members and relevant stakeholders, including the Community Empowerment Institution (Lembaga Pemberdayaan Masyarakat/LPM). Through the establishment of clear operational guidelines, waste management activities can be implemented in a more systematic, coordinated, accountable, and sustainable manner.

Building upon the understanding established during the initial discussion, the community service team conducted a series of training activities organized into several strategic stages. In the first stage, participants were provided with an overview of the current conditions and challenges of waste management in Garut Regency. The presentation was intended to broaden participants' understanding that waste management problems are not solely attributable to community behavior, but are also influenced by structural weaknesses in the existing management system. This perspective encouraged participants to recognize the importance of establishing Standard Operating Procedures (SOPs) at both the village and neighborhood (RT/RW) levels as an instrument for addressing gaps within the waste management system. The SOPs are expected to establish clear internal regulations concerning the roles, responsibilities, and working mechanisms of residents and relevant community institutions, including the Community Empowerment Institution (Lembaga Pemberdayaan Masyarakat/LPM). Consequently, the development of clear operational procedures can serve as a foundation for improving the coordination, consistency, accountability, and effectiveness of waste management practices at the local level.



Source: author documentation 2025

Figure 2. Exposure to Material on SOP Preparation for Waste Management

The subsequent stage involved an interactive workshop aimed at mapping waste management workflows based on the actual conditions and characteristics of participants' respective neighborhoods. This participatory process generated substantive discussions, as each neighborhood exhibited distinct environmental, social, and demographic characteristics that influenced the nature and volume of waste generated. For instance, areas located near traditional markets tended to generate greater quantities of organic waste, whereas neighborhoods with a high concentration of student rental houses were more likely to produce larger amounts of single-use plastic waste.

These variations demonstrated the need for a waste management SOP that is sufficiently adaptable to local conditions while maintaining uniform minimum standards. Through collaborative discussions, community members, local authorities, and other relevant stakeholders jointly identified appropriate procedures and responsibilities for each stage of waste management. The resulting approach sought to balance contextual flexibility with operational standardization, thereby enabling the SOP to respond to specific neighborhood characteristics without compromising consistency, accountability, and the overall objectives of sustainable waste management.

The final stage consisted of delivering comprehensive educational materials on waste management. The materials covered practical techniques for sorting organic and inorganic waste at the source, the environmental and socioeconomic benefits of effective waste management, and management strategies adapted to the specific conditions of the local community. This educational approach was designed to strengthen participants'

knowledge and practical understanding of appropriate waste management practices. By integrating technical knowledge with an understanding of local needs and conditions, the activity encouraged participants to implement waste management procedures consistently, systematically, and responsibly within their respective communities.

The series of training sessions and participatory workshops resulted in the formulation of a comprehensive Standard Operating Procedure (SOP) for waste management in Paminggir Village. The SOP was developed based on the inputs, experiences, and needs identified through the participatory process and is intended to provide a clear and systematic framework for implementing waste management activities at the local level. The agreed-upon SOP encompasses four main stages:

- 1) Household Waste Sorting
- 2) Scheduled Neighborhood Waste Collection
- 3) Waste Transportation to the Designated Collection Point and
- 4) Waste Processing and Follow-Up Management.

An important aspect of the SOP development process was the explicit delineation of the roles and responsibilities of each stakeholder involved in waste management, beginning at the household level and extending to RT, RW, and village government institutions. Clearly defining these responsibilities is essential for establishing accountability and ensuring that each stage of the waste management process is carried out in accordance with an agreed-upon framework. Following the participatory drafting process, the proposed SOP was subjected to an administrative review by the Head of Subdistrict and Subdistrict Secretary before being formally ratified as a village-level SOP. The establishment of a written and standardized SOP is particularly important because waste management practices that rely primarily on informal procedures, habitual practices, or the individual experience of personnel may result in inconsistencies in service delivery and uncertainty regarding implementation timelines. Such conditions may ultimately affect public satisfaction with waste management services. A clearly structured SOP can therefore serve as an operational and administrative instrument for standardizing procedures, clarifying responsibilities, and improving the efficiency and effectiveness of public services (Fatimah & Rosdiana, 2025). The complete results of the SOP development

process and waste management education activities conducted in Paminggir Village are presented as follows

1) SOP for Waste Transportation at Subdistrict Level

The effectiveness of waste management in Paminggir Village depends substantially on clear coordination and an appropriate division of responsibilities among all stakeholders involved. A well-defined allocation of tasks is necessary to ensure that each stage of the waste management process is implemented systematically, consistently, and accountably. Accordingly, Table 2 presents a detailed description of the roles and responsibilities, working schedules, and expected outputs associated with each component involved in the waste management system:

Table 2. Roles, Job Descriptions, and Responsibilities in Waste Management in Paminggir Village

No	Scope of Duties	Responsibilities	Working Hours
1.	Head of Subdistrict	a. Formulating policies and regulations governing waste transportation within the village area b. Issuing an Assignment Letter for personnel responsible for waste transportation. c. Monitoring and evaluating the implementation of waste collection activities. d. Instructing and coordinating with neighborhood leaders to facilitate the provision and utilization of waste transportation facilities. e. Providing and ensuring the	Working hours: 08:00 In the field: 2 hours In the office: 6 hours (Monday to Friday)

		availability of waste bins in each neighborhood at the RT and RW levels.	
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Source: processed by the author, 2025

Table 2 presents the distribution of tasks, roles, and responsibilities for waste management in Paminggir Village as established through a participatory process involving relevant stakeholders. The allocation of responsibilities reflects a comprehensive and integrated approach to waste management, encompassing multiple levels of community involvement, from individual households and neighborhood units (RT/RW) to village government institutions. Each stakeholder is assigned specific responsibilities according to their respective functions and authority, thereby providing a clear framework for coordination, accountability, and implementation of waste management activities at the local level.

The Waste Management Standard Operating Procedure (SOP) serves as an operational guideline that establishes the methods, procedures, and mechanisms for waste management activities in Paminggir Village. The document is designed to provide clear guidance regarding the duties and responsibilities of each stakeholder, improve the efficiency and effectiveness of waste management operations, and promote consistency in the delivery of waste management services to the community. Through the implementation of standardized procedures, the SOP is expected to strengthen coordination, accountability, and the sustainability of waste management practices at the village level..

In developing the Waste Management Standard Operating Procedure (SOP), the community service team ensured that each operational stage was systematically defined in a detailed, clear, and measurable manner. The SOP encompasses the entire waste management process, beginning with waste sorting at the household level, followed by collection at the neighborhood level, transportation to the designated temporary waste collection or processing facility, and subsequent treatment of waste according to its type. Organic waste is directed toward composting or other appropriate processing methods, while recyclable inorganic waste is collected for recovery and may be transferred or sold through designated recycling channels. Each stage of the waste management process

is accompanied by clearly defined and measurable performance indicators. These indicators are intended to facilitate monitoring and evaluation, assess the consistency of implementation, identify operational constraints, and provide a basis for continuous improvement of waste management services. Thus, the SOP functions not only as an operational guideline but also as an instrument for ensuring accountability and evaluating the effectiveness of waste management practices in Paminggir Village.

The Waste Management Standard Operating Procedure (SOP) developed through the community service program consists of five principal components that provide a comprehensive framework for implementing waste management activities. These components include: (1) activities, specifying the tasks and procedures to be carried out at each stage of waste management; (2) implementers or responsible parties, identifying the individuals, community groups, or institutions responsible for executing each activity; (3) time and implementation schedule, establishing the agreed timeframe and frequency for conducting the activities; (4) required facilities and infrastructure, specifying the equipment and supporting resources necessary for implementation; and (5) outputs or expected results, defining the outcomes to be achieved at each stage of the process. The integration of these five components provides each stakeholder with clear operational guidance regarding what needs to be done, who is responsible for carrying it out, when the activity should be implemented, what resources are required, and what results are expected. Consequently, the SOP provides a structured basis for improving coordination, accountability, consistency, and measurability in waste management implementation at the village level. The operational details of the Waste Management SOP, which were developed participatively in Paminggir Village, are presented in the following Table 3.

Table 3. Standard Operational Procedure (SOP) Waste Management

No.	Activity	Implementers					Standard Quality			Description
		Garbage Gatherer	Garbage Truck Driver	Garbage Collector	RT/RW	Subdistrict Head	Completeness	Time	Output	
1	Starting									
2	Ordering garbage collection						Circular Letter	30 Min	Circular Letter	
3	Coordinating garbage collection						Circular Letter	4 Hours	Garbage Collection Information	
4	Providing a garbage transport fleet						Workshop Tools	30 Min	Fleet operational readiness	Checks include: oil, brakes, engine dll
5	Collecting garbage to the garbage truck						Garbage Transport Fleet	60 Min	Garbage Transport Fleet standby in the garbage dump	Adjusting the distance to the garbage dump
6	Transporting the garbage						Fleet, field work clothes, cleaning tools and transportation	1 Hours 30 Minute	Trash is piling up in the garbage fleet	
7	Taking garbage to the dumpster						Fleet, field work clothes, cleaning tools, and transportation	1 Hours	Garbage taken Process	Adjusting the distance to the garbage dump

8	Weighing garbage at the garbage weighing station						Timbangan	5 Min	Trash weight data	Next page
9	Dropping garbage into the designated place						Fleet, crew	60 Min	The accumulation of garbage	
10.	Clean the garbage fleet						Fleet, cleaning tools	60 Min	A clean fleet, ready to be used the next day	
11.	Reporting						Activity Report	15 Min	Report Data	
12	Receiving the work report result						Document/ data	15 Min	Document/ data	Transport from the TPS to the TPA by the DLH Transport Team
13	Finish									

Source: processed by the author, 2025

2. Waste Sorting SOP

The way to improve the effectiveness of waste management in Paminggir Village, a waste sorting system should be implemented through the active participation of all community members and relevant personnel. The system requires a clear division of roles and responsibilities, covering the sorting of waste at the household level through its delivery to designated waste collection points. The detailed allocation of tasks and responsibilities is presented in the following table. :

Table 4. Job Description and Responsibilities of Paminggir Village Waste Management

No	Scope of Duties	Responsibilities	Working Hours	Output
1.	Head of Subdistric	a. Arranging staff assignments based on work locations b. Supervising the implementation of waste sorting c. Making a report on the activity implementation	Working hours : 08.00 On the field : 6 hours In the officer : 2 hours Monday to Sunday	Maintaining the cleanliness, orderliness, and environmental aesthetics of Paminggir Village and its surrounding areas in Garut Regency
2.	Community Unit (RT/RW)	a. Provide instructions and raise awareness among the community regarding household waste sorting. b. Monitor the implementation of waste sorting within each household.	Carried out during community activities.	
3	Garbage Maintenance Worker	a. Provide two trash cans for each object - Blue: Organic - Red: Organic b. Organic waste is processed into compost c. Inorganic waste is sorted to be reused or processed into something else (Ecobrick) d. Reporting work results for each work area	Working Hours 8 hours a day (Monday to Sunday)	

Source : processed by the author, 2025

Table 4 presents the detailed division of tasks and responsibilities among stakeholders involved in waste management in Paminggir Village. The allocation of roles encompasses all organizational levels, ranging from households and RT/RW units to the village government. Each stakeholder is assigned specific, clearly defined, and measurable duties to ensure effective coordination, prevent overlapping responsibilities, and support the consistent implementation of waste management activities.

Another important aspect concerns the influence of Standard Operating Procedures (SOPs) on communication and coordination patterns among actors involved in waste management. During the implementation process, neighborhood officials reported experiencing difficulties because residents frequently submitted waste-related complaints directly to them without first coordinating with the RT (neighborhood unit). At the same time, RT officials perceived that they had limited authority to address these issues because there was no written regulation providing a clear mandate regarding their responsibilities. This situation indicates that coordination problems are partly rooted in the absence of a shared understanding of the roles, authorities, and responsibilities of each actor, as well as the lack of systematic procedures for managing waste-related issues. The implementation of a clearly defined SOP can therefore provide a formal coordination mechanism by establishing communication channels, delineating responsibilities, and clarifying the procedures for reporting and resolving waste management problems.

The Waste Management SOP is designed not only to define the scope of activities and the actors responsible for their implementation but also to establish the procedures, mechanisms, and timelines for each stage of the waste management process. The waste sorting SOP was developed through a participatory process involving relevant stakeholders in Paminggir Village. This participatory approach was intended to ensure that the procedures reflect local conditions, clearly define the responsibilities of each actor, and facilitate effective coordination among stakeholders. The resulting SOP framework is presented as follows:

Table. 5 Standard Operational Procedure (SOP) of Waste Sorting in Paminggir Village

No.	Procedure Details	Implementers					Standard Quality		Desc	
		Resident	Neighborhood garbage officer	RT RW / Cmmunit y Unit	Waste Bank	Subdistrict	Completeness	Time		Output
1	Starting									
2	The sub-district provides three trash bins at each location: Blue: Organic, Red: Inorganic, Yellow: B3) in each neighborhood						Notification Letter for Alley Garbage Dump	8 Hours	Alley Garbage Dump Information	
3	Residents sort & put trash into the bins according to the type						Organic and non-organic trash bin	10 Min	Organic & inorganic waste sorted	
4	The neighborhood garbage officer coordinates the non-organic trash to be sold to the waste bank						Cleaning tools, garbage collection vehicles	1 day	Location Free of Trash	
5	Non-organic waste is sold to the Waste Bank or processed into other forms						Shredder, Sifter, Scales, Trolley, Sack Sewing Machine, etc.	3 – 25 day	Recycled goods	
6	Organic waste is taken to the composting site to be processed into compost						Shredder, Sieve Machine, Scale, Tloli, Sack Sewing Machine, etc.	7 – 90 days	Compost	
7	B3 waste is thrown into the B3 waste processing site						Vehicles, Communication Devices	< 1 hours	Condition of the Garbage Dump Site	
8	The neighborhood chief is overseeing the garbage sorting activities						Daily report book for sorted waste	75 Min	The completion of waste sorting	
9	Finished									

Source: processed by the author, 2025

Table 5 presents the detailed operational procedures for waste sorting that were collectively agreed upon by the stakeholders involved. The implementation of the Waste Sorting SOP has generated several important findings, particularly regarding increased community awareness and improvements in waste management governance in Paminggir Village. These findings indicate that the establishment of clear and participatory procedures can contribute to more systematic waste sorting practices, strengthen the involvement of community members, and improve coordination among stakeholders.

The training results demonstrated an increased understanding among community members of the importance of SOPs in ensuring consistency in waste management practices. Several residents shared their previous experiences, in which community service activities were generally conducted only in response to urgent environmental problems, such as severely clogged drainage channels. The implementation of the SOP, however, establishes clear provisions regarding the frequency of community service activities, the individuals responsible for coordinating them, and measurable indicators of successful implementation. This structured approach represents a shift from a reactive culture, in which action is taken only when environmental problems become critical, toward a preventive culture characterized by regular, scheduled, and measurable activities. Such an approach is consistent with the program's objective of fostering collective awareness and responsibility for maintaining a healthy living environment through sustained community participation rather than relying solely on responses to emergency situations.

These training findings shows that the development of SOPs can function as an important mechanism for bridging the gap between macro-level policy and micro-level implementation. Although the Garut Regency Government has established general regulations governing waste management, such regulatory frameworks may not always provide sufficient technical guidance for implementation at the community level. Through a participatory development process, these broader policy provisions can be translated into operational guidelines that are more responsive to local conditions, capacities, and community needs. In this context, the SOP serves not merely as a technical instrument for standardizing waste management procedures but also as a social and institutional instrument that strengthens shared commitments,

clarifies responsibilities, and facilitates coordination between community members and local officials. Consequently, participatory SOP development can contribute to narrowing the implementation gap between formal regulatory frameworks and everyday waste management practices at the village level.

The established SOP has contributed to a more structured and systematic communication flow among the actors involved in waste management. Under the established mechanism, residents submit waste-related complaints or reports to the RT, which subsequently coordinates with the village government. The village government then communicates and coordinates with the Environmental Agency (DLH) regarding matters requiring further intervention or support. This clearly defined communication structure indirectly strengthens local governance by establishing appropriate channels for reporting and coordination, while clarifying the roles, responsibilities, and authority of each actor. As a result, waste management issues can be addressed through a more coordinated and accountable process rather than through informal or individual responses.

The implementation of the SOP training has had a positive effect on the confidence of both local officials and community members in managing their surrounding environment. Neighborhood officials perceived the SOP as a legitimate institutional instrument that provides a clear basis for regulating and coordinating waste management activities within their respective areas. Meanwhile, community members felt that their involvement in the drafting process gave them an opportunity to contribute to the formulation of the procedures, thereby reducing the perception that the resulting regulations were imposed in a top-down manner. The participation of actors at multiple levels, including the village government, RW, RT, and community members, contributed to a sense of collective ownership of the SOP. Such ownership may encourage greater acceptance and compliance because the procedures are perceived as collectively developed and mutually agreed upon rather than solely formulated by the government. Thus, participatory SOP development can strengthen both institutional legitimacy and community commitment to the implementation of waste management practices.

The sustainability dimension of the SOP developed during the training is also supported by the inclusion of a periodic evaluation mechanism. The participants agreed to conduct monthly evaluation meetings at the RW level to assess the implementation and

effectiveness of the SOP. This mechanism is important because SOP documents may become merely administrative formalities if they are not accompanied by systematic monitoring and follow-up. Through regular evaluations, community members and local officials can identify implementation barriers, assess non-compliance, and determine necessary adjustments based on conditions encountered in practice. For instance, if the established waste collection schedule does not adequately accommodate residents' needs, the relevant provisions can be revised without compromising the fundamental principles and objectives of the SOP. Thus, the evaluation mechanism enables the SOP to function as an adaptive governance instrument that can be continuously improved in response to changing local conditions while maintaining consistency in waste management standards.

The training also increased awareness of the importance of integrating village-level SOPs with broader waste management programs at the district level. One practical mechanism is the systematic reporting of waste-sorting data generated at the neighborhood level to the village government, which can subsequently consolidate and communicate the information to the Environmental Agency (DLH). Such a reporting mechanism can provide local government with more accurate and systematic information regarding community participation in waste sorting and its contribution to waste reduction. In this regard, the integration of local SOPs with district-level programs can strengthen vertical coordination, support evidence-based decision-making, and facilitate the monitoring and evaluation of waste management performance across administrative levels.

The training results indicate that the development of the Waste Management and Handling SOP made an important contribution to strengthening environmental governance in Paminggir Village. The SOP extends beyond the establishment of technical waste management procedures by providing a framework for clarifying institutional roles and responsibilities, structuring communication and coordination mechanisms, establishing periodic evaluation processes, and fostering shared commitment among stakeholders. These findings are consistent with the broader objectives of the community service program, which seek to generate changes not only in the physical environment but also in the social and institutional dimensions that underpin sustainable waste

management. Accordingly, the SOP can serve as an instrument for strengthening local institutional capacity and promoting more systematic, participatory, and sustainable environmental management practices at the village level.

The SOP developed through this program has the potential to serve as a reference for other villages in Garut Regency that face similar collective challenges in waste management. However, the implementation of the program continues to face several challenges, particularly in maintaining the consistency and sustainability of SOP implementation over the long term. Some community members remain skeptical about the durability of the initiative, expressing concerns that compliance with the SOP may be maintained only during the initial stages of the program and gradually decline once the program activities have ended. This concern highlights the importance of sustained monitoring, periodic evaluation, community engagement, and institutional support to ensure that the SOP becomes an established part of routine waste management practices rather than merely a temporary program intervention.

To address this challenge, the outreach team provides additional support by training community volunteers in each neighborhood to serve as community-based internal monitors of SOP implementation. These volunteers are expected to assist in monitoring compliance, identifying implementation constraints, and encouraging residents to maintain consistent waste management practices. In addition, the introduction of modest incentive mechanisms, such as recognition or awards for neighborhood units demonstrating high levels of compliance, has been proposed to encourage continued adherence to the SOP. The combination of community-based monitoring and positive incentives is expected to strengthen collective responsibility and support the long-term sustainability of waste management practices in Paminggir Village.

The development of the SOP involved interactive dialogue among the community service team, training participants, and village officials. Through discussion and question-and-answer sessions, participants were able to clarify their understanding of the proposed procedures, raise practical concerns, and contribute insights based on their experiences in the field. This participatory process enabled the SOP to incorporate local perspectives and practical considerations relevant to waste management implementation in Paminggir

Village. Figure 3 presents one of the discussion and question-and-answer sessions conducted during the development of the Waste Management SOP.



Source: author documentation, 2025

Figure 3. Discussion and Q&A with Participants and Officials about SOP

Following the development of the Waste Sorting SOP through intensive discussions with participants, the next stage involved its practical implementation through community-based educational activities. The education component was designed to provide community members with a comprehensive understanding of the importance of proper waste management, extending beyond the technical and operational procedures outlined in the SOP. It also emphasized environmental awareness, individual and collective responsibility, and the adoption of sustainable lifestyle practices. Through this approach, the program sought to ensure that the SOP would not merely function as a set of operational guidelines but also contribute to strengthening community awareness and encouraging sustainable waste management behavior in everyday life.

Waste management education was conducted based on the 5R principles—Reduce, Reuse, Recycle, Replace, and Replant—with particular emphasis on waste sorting and the role of waste banks as instruments for sustainable waste management. The educational activities were delivered through socialization sessions and practical training involving community members of Paminggir Village. The training emphasized the importance of sorting waste at its source, particularly at the household level, as the initial stage of an effective waste management system. Participants were introduced to the separation of waste into two main categories: organic and inorganic waste. Organic waste, such as food scraps and fallen leaves, can be processed into compost, while inorganic waste,

including plastic, paper, cardboard, cans, and bottles, can be collected and managed through the waste bank system. This approach enables waste to be treated as a potentially valuable resource while reducing the volume of waste requiring final disposal. Figure 4 presents one of the educational sessions and practical demonstrations of waste sorting conducted collaboratively with the Paminggir Village community.



Source: author documentation, 2025

Figure 4. Delivery of Material and Discussions

The next stage involved establishing a mechanism for collecting and managing sorted waste, particularly inorganic waste with potential economic value. In this context, the community service team introduced the concept of a waste bank as a community-based waste management mechanism. The waste bank was presented not only as an approach to addressing waste management challenges but also as an instrument for promoting community participation and local economic empowerment. Through the systematic collection, sorting, and utilization of recyclable materials, the waste bank can provide an alternative mechanism for managing inorganic waste while creating potential economic benefits for participating community members.

Waste banks were introduced as community-based centers for collecting and managing inorganic waste with economic value. In the context of the circular economy, waste bank initiatives can create economic opportunities by transforming recyclable materials into valuable resources. Hasse and Moreno-Ríos (2025), for example, reported that similar waste management practices generated more than 60 employment opportunities through micro and small businesses. A similar potential can be observed in Paminggir Village, where community members can generate additional income through the collection and management of recyclable inorganic waste. Through the waste bank

system, residents deposit sorted waste, which is subsequently weighed, recorded, and assigned an economic value based on its type and weight. This mechanism not only contributes to reducing the volume of waste sent to disposal facilities but also provides an opportunity for the community to derive economic benefits from materials that would otherwise be discarded. Furthermore, waste banks can function as an intermediary between the community and the recycling sector, facilitating the collection and distribution of recyclable materials for further processing into new and useful products. Thus, the waste bank serves both an environmental and economic function by supporting waste reduction, resource recovery, and community-based economic empowerment.

The community service team developed an educational poster presenting the 5R principles—Reduce, Reuse, Recycle, Replace, and Replant—as a visual learning medium for promoting sustainable waste management practices (Puspanantasari & Doolgindachbaporn, 1945). The educational material was designed using an engaging, visually appealing, and easy-to-understand format to facilitate community comprehension and encourage the practical application of the 5R principles in everyday life. Figure 5 presents the educational poster used during the community outreach activities.



Source : Processed by the Author, 2025

Figure 5. Educational Poster for the Community on Waste Management through the 5 R Principle

The educational poster on waste management based on the 5R principles, presented in Figure 5, serves as an important communication medium for increasing public awareness of responsible waste

management practices. Through engaging visual elements and clear, accessible messages, the educational material is designed to strengthen community understanding of the importance of waste sorting and the utilization of waste banks as a community-based waste management solution. These practices are expected to contribute not only to environmental sustainability by reducing the volume of waste requiring disposal, but also to generate potential economic benefits for the community of Paminggir Village through the recovery and management of recyclable materials.

4. Conclusion

The community service program in Paminggir Village, implemented through the development of waste management Standard Operating Procedures (SOPs) and education based on the 5R principles, has produced a clear and measurable operational framework for sustainable waste management. Developed through a participatory process, the SOPs function not only as technical guidelines but also as social and institutional instruments that strengthen local governance, clarify the roles and responsibilities of stakeholders, and foster collective commitment among community members and village officials. These outcomes indicate that the waste management practices established in Paminggir Village have the potential to serve as a reference for other villages facing similar challenges. However, the sustainability and broader application of these practices depend on the continuity of the program, consistent community participation, and sustained support and commitment from the local government.

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