

COLLABORATIVE GOVERNANCE AS A SYNERGY BETWEEN THE LOCAL GOVERNMENT AND COMMUNITY-BASED GROUPS (KSM) IN COMMUNITY-BASED WASTE MANAGEMENT IN GRENDENG SUBDISTRICT

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Abstract

Waste management in Grendeng Village, Banyumas Regency, is carried out through collaboration among various parties, such as the government, Community Self-Help Groups (KSM), the community, and academics. However, its implementation still faces various obstacles, such as inadequate infrastructure, limited funding, limited management capacity, a lack of cooperation, and unclear roles and responsibilities among the parties involved. Therefore, this study aims to analyze how collaborative governance is implemented in community-based waste management in Grendeng Village. This study was conducted using a descriptive qualitative approach with a case study methodology, employing data collection techniques such as interviews, observations, and documentation. It drew upon the collaborative governance framework proposed by Ansell and Gash (2008), which encompasses several key aspects, including starting conditions, institutional design, facilitative leadership, and the collaborative process. The results indicate that collaborative governance in waste management in Grendeng Village has been implemented by involving various stakeholders but has not yet been effective. Regarding starting conditions, there is a disparity between the resource needs and the capabilities possessed by the various parties. Regarding institutional design, there is a division of tasks, but this division is not yet comprehensive or entirely clear. Furthermore, in terms of facilitative leadership, the government has been involved in providing support and assistance through its facilitative leadership style; however, the government's role as a liaison among stakeholders still needs to be strengthened. This is because coordination, role allocation, and communication among the Community-Based Waste Management Group (KSM), the community, the subdistrict government, and other parties have not yet taken place in a structured and sustainable manner. Meanwhile, regarding the collaborative process, it

was found that communication and collaboration among the involved parties still need to be improved, especially since trust, commitment, and mutual understanding among all actors have not yet been fully established. Therefore, the primary issue is not a lack of cooperation, but rather the absence of a formal structure and the use of ineffective methods in coordinating the roles and resources of the actors directly involved in waste management in Grendeng Subdistrict.

Keywords: collaborative governance, waste management, KSM, Grendeng Subdistrict

INTRODUCTION

Environmental issues are a crucial component of the regional development process because they are directly linked to the well-being of the community and the government's ability to manage resources effectively and sustainably (Monteiro & Ribeiro, 2023). In addressing these various challenges, the government is not only responsible for formulating policies but must also establish a governance system capable of handling environmental issues by involving various stakeholders (Zhang et al., 2020). One environmental issue that remains a concern in regional development is waste management (Kurniawan et al., 2023). The issue of waste is not only related to the availability of facilities and infrastructure but also encompasses institutional aspects, financing, community participation, and coordination between the government and parties involved in generating and managing waste (Batista et al., 2021). Therefore, the success of waste management cannot be judged solely by how much waste is collected or processed, but also by the system's ability to operate in a coordinated and sustainable manner (Jucá et al., 2020).

Banyumas Regency is an interesting area to study in the context of community-based waste management. Banyumas has developed a waste management approach that involves the community through Community Self-Help Groups (KSM) (Pamuji et al., 2022). This approach has garnered attention through various achievements and visits from outside parties. In 2025, Banyumas became one of 35 regions to receive the "Certificate Toward a Clean Regency/City" for its efforts in waste management, as reported by *Radio Republik Indonesia (RRI)*. Interest in this system has also come from abroad. In April 2026, representatives from Selangor, Malaysia, visited Banyumas to observe firsthand the community-based waste management practices implemented in the region (Wahyudi, 2026). That same month, President Prabowo Subianto also visited the Banyumas Integrated Environment-Based and Educational Waste Management Facility (TPST BLE) and commended the use of relatively simple technology that effectively supports efficient waste management (Safitri, 2026). This attention indicates that the waste management approach in Banyumas has become a practice of interest for other regions and stakeholders to study.

However, this achievement does not automatically mean that all areas in Banyumas Regency have the same waste management capacity. According to information provided by the Head of the Banyumas TPST UPTD in April 2026, waste generation in Banyumas Regency reached 738.80 metric tons per day. Of this total, 574.52 metric tons or 77.76 percent had been managed, while approximately 164 metric tons per day still required further handling, particularly in areas that do not yet have TPST facilities (Central Java Provincial Government, 2026). These data indicate that there remains a gap between the amount of waste generated and

the available management capacity (*World Bank, 2021*). This situation suggests that waste management in Banyumas still requires strengthening, particularly in ensuring that facilities, resources, institutional frameworks, and management support can reach various regions according to their needs (*Kurniawan et al., 2023*).

Community-based waste management in Banyumas is part of a shift in the waste management system, which was previously more oriented toward a “collect-transport-dispose” model. Through Banyumas Regent Circular Letter No. 660.1/7776/2018, the local government is promoting this change by involving Community-Based Waste Management Groups (KSM) at the village and sub-district levels. In this system, the community is not merely viewed as waste generators but also plays a role in the management process (*Dhokhikah et al., 2015*). KSMS are among the groups that hold a key position because they are directly involved in the implementation of waste management at the community level (*Oates et al., 2023*). However, the existence of KSMS alone is not sufficient to ensure the sustainability of waste management. KSMS still require support in the form of resources, facilities, funding, institutional backing, and clear cooperative relationships with the government and other parties involved in waste generation (*Aparcana, 2017*).

This situation can be observed in Grendeng Village, North Purwokerto Subdistrict, Banyumas Regency, which is characterized as an area surrounding a university campus and is largely inhabited by college students and newcomers. Educational activities and population mobility contribute to the dynamics of waste generation in the area. Based on the results of preliminary interviews with the Grendeng KSM management, it was found that the amount of waste handled decreases when the university enters its break period. This finding indicates a change in the volume of waste managed by the KSM in line with changes in activity within the university environment. Additionally, based on the results of the same preliminary interviews It also shows that the Grendeng Community-Based Waste Management Group (KSM) still faces limitations in terms of facilities and equipment for waste processing. Consequently, the KSM not only has to cope with fluctuations in the amount of waste it must handle but also needs to carry out waste management activities with limited facilities and infrastructure.

These issues demonstrate that the situation of the Grendeng Community-Based Waste Management Group (KSM) cannot be assessed solely based on its technical capacity to process waste. The availability of facilities and equipment must be considered alongside the group’s available resources, division of roles, institutional structure, leadership, funding, and the relationships between the KSM and other parties involved in waste management. In the context of Grendeng, the parties involved include not only the local government and the KSM but also the urban village government, the community, universities, students, and other entities that generate waste. The large number of parties involved in waste management makes coordination and the division of responsibilities crucial. Higher education institutions engage in activities that contribute to waste generation in the Grendeng area; therefore, the KSM’s role as the waste manager must be supported by clear cooperative relationships so that the burden of waste management does not fall solely on the KSM.

Several previous studies have examined community-based waste management in Banyumas Regency, such as the study by *Pamuji et al. (2023)*, which analyzed the institutional model of community-based waste management and the importance of strengthening

collaboration among waste management stakeholders. Meanwhile, *Rusmawan et al. (2022)* discussed the collaborative governance process in digital-based waste management innovations in Banyumas Regency, involving the government, the private sector, Community Self-Help Groups (KSM), and the public. *Islamiati's (2024)* study specifically analyzes collaborative governance in waste management in Banyumas Regency and highlights the importance of network structures, commitment to shared goals, governance, and information exchange for the success of such collaborations. In addition, research on waste management in the context of educational environments has also been conducted, such as the study by *Susilo et al. (2022)*, which examined the relationship between campuses and the community in waste management, and the study by *Sumiyati et al. (2025)*, which discussed waste management through waste banks at Diponegoro University. Based on these previous studies, it is clear that research on waste management in Banyumas has addressed aspects ranging from policy, institutional frameworks, community participation, digital innovation, to collaborative governance at the regency level (*Pazqara, 2022*). This aligns with the findings of *Napitupulu and Muhyidin (2021)*, who demonstrated that sustainable waste management requires the involvement and collaboration of stakeholders, and that further research is needed on partnerships among parties at the local level. The management of waste banks requires support from local governments as well as the involvement of the private sector and nongovernmental organizations within a framework of collaborative governance (*Gusmi and Husein, 2023*). However, there remains potential for further research aimed at examining how the processes of interaction, communication, division of roles, and coordination among various parties unfold at a more specific local level, particularly in areas characterized as educational environments (*Islamiati., 2024*). This is important because educational areas such as Grendeng not only involve the community as waste generators and managers but also include students, universities, business operators, local governments, and community groups that can form diverse patterns of relationships and interests (*Utami et al., 2024*). Thus, research on waste management in the Grendeng area can provide a deeper perspective on the process of collaborative governance among local actors in community-based waste management an aspect that has not been a primary focus of previous studies.

To examine this issue more comprehensively, this study employs the Collaborative Governance framework proposed by *Ansell and Gash (2008)*. This framework posits that resolving public issues requires the involvement of various stakeholders in both the decision-making process and policy implementation (*Ulibarri et al., 2023*). Ansell and Gash explain Collaborative Governance through several key components: initial conditions, institutional design, facilitative leadership, and collaborative processes (*Afandi et al., 2023*). Initial conditions are used to assess available resources, disparities among actors, and the history of established cooperative relationships. Institutional design is used to examine rules, the division of roles, and participation mechanisms. Facilitative leadership relates to the role of parties that encourage and facilitate the collaborative process, while the collaborative process is used to examine how dialogue, trust, commitment, and shared understanding are built among the parties (*Rice & McCool, 2022*).

different locations. The limitations of KSM facilities, changes in waste volume due to university activities, and the need for community participation indicate that the solution to waste management issues cannot be solely placed on KSM. Community-based waste management requires institutional support and cooperation among stakeholders, given that the

limited capacity of the community is one of the challenges in its implementation (*Pamuji et al., 2023*). In the Indonesian context, local governments play a role in establishing policies and supporting the implementation of waste management, while the community is obligated to reduce and manage waste at its source (*Law of the Republic of Indonesia No. 18 of 2008*). The urgency of waste management is also linked to sustainable development goals through the Sustainable Development Goals (SDGs) (*Roy et al., 2023*). Waste management plays a crucial role in creating more sustainable cities, which is part of SDG 11. This goal includes Target 11.6, which focuses on reducing the adverse environmental impacts of waste in urban areas (*Marlina, 2024*). It is also linked to SDG 12, particularly Target 12.4, which focuses on environmentally sound waste management, as well as Target 12.5, which promotes waste reduction through prevention, minimization, recycling, and reuse (*Kurniawan et al., 2024*). In its implementation at the local level, waste management focuses not only on collection and processing but also on efforts to reduce waste generation at the source (*Magrini et al., 2021*). These efforts require the involvement of the government, the community, and waste generators to ensure sustainable management (*Mukhlis et al., 2025*). Based on this, waste management in Grendeng requires the involvement of various actors with complementary roles. The local government plays a role in providing policies and resource support; the village government facilitates coordination at the local level; the Community-Based Waste Management Group (KSM) carries out waste management directly the community participates in reducing and sorting waste at the source; while universities and student groups also play a role in managing waste generated from educational activities. However, the involvement of these various actors does not automatically mean that collaboration is functioning optimally. Therefore, an in-depth study is needed on how the division of roles, coordination, and support among the parties take place, as well as the extent to which these aspects support the implementation of waste management. On this basis, this study focuses on community-based waste management by the Grendeng KSM, with the aim of identifying emerging issues and analyzing factors influencing its implementation from a Collaborative Governance perspective. The research findings are expected to serve as a basis for consideration by the Banyumas Regency Government in strengthening community-based waste management, particularly in areas with characteristics similar to those of Grendeng Village. This connection is all the more important because Grendeng Village is an area with a high level of educational activity. Higher education activities and the presence of college students contribute to increased waste generation in the area. Therefore, the effort to achieve sustainable waste management cannot be entirely placed on the Community-Based Waste Management Group (KSM) as one of the key actors in waste management. Those who generate waste also need to be involved from the early stages, particularly in waste sorting, reduction, and management activities (*Harnita, 2025*). This is crucial for building a more integrated and sustainable waste management system at the local level. Furthermore, community-level waste management can serve as a means of implementing the Sustainable Development Goals (SDGs) through concrete environmental actions, as demonstrated by (*Ratnasari et al., 2023*). Based on the issues and factors identified, policy recommendations can focus on several aspects. First, periodic mapping of KSM needs to ensure that support for facilities and infrastructure is tailored to the conditions and capacities of each group. Second, institutional strengthening of KSMs through guidance in organizational management, administration, financing, and capacity building for managers. Third, developing clearer cooperation mechanisms among KSMs, local governments, village administrations, the community, and universities, including the division of responsibilities in reducing, sorting, and

managing waste generated by campus activities. Fourth, strengthening funding schemes through the development of diverse and sustainable funding sources to support KSM operations. Fifth, enhancing public education and participation in source-separated waste sorting. Sixth, establishing a local-level waste management coordination forum involving the KSM, village governments, local government agencies, the community, and universities to periodically discuss needs, challenges, and the division of roles. These recommendations should be further aligned with the research findings so that the resulting policies can address real-world problems and meet the needs of local stakeholders.

Thus, community-based waste management in Grendeng Village must be understood not only in terms of technical aspects and the availability of facilities but also in terms of the relationships among the various parties involved in its implementation. The role of the KSM as the direct implementer of waste management must be supported by coordination, the division of responsibilities, resource support, and the participation of the community and higher education institutions. Although various actors play a role in waste management, there remains a need to understand how these roles are carried out and what factors influence the formation of collaboration at the local level. Therefore, research on Collaborative Governance within the Grendeng KSM is essential to elucidate the dynamics of collaboration in community-based waste management and to identify aspects that need to be strengthened to support the sustainability of waste management in accordance with the area's characteristics.

METHODOLOGY

This study employs a qualitative approach using a case study design to conduct an in-depth analysis of the collaborative governance process in community-based waste management through synergy between the local government and the Grendeng Community Self-Help Group (KSM). The use of descriptive qualitative methods in this study aims to explore in depth the complexity of policy phenomena, particularly in understanding the context, processes, and meanings behind the dynamics of their implementation (*Hariawan et al., 2025*). Qualitative methods primarily employ open-ended questions and varied data in the form of text and images, utilizing innovative methodologies (*Creswell, 2014*). This qualitative case study was conducted on October 24, 2025, at the Grendeng Community Self-Help Group (KSM) to analyze the collaborative process among local government, the KSM, the community, universities, and business actors in community-based waste management within a real-life context (*Creswell, 2014*). Data were collected through in-depth interviews with 9 key informants selected via purposive sampling, direct field observations, and a review of documentation related to waste management and the activities of the Grendeng KSM. Data validity was tested through source and technique triangulation, then analyzed interactively using the model by *Miles, Huberman, & Saldana (2014)*, which includes the stages of data condensation, data presentation, and drawing/testing conclusions.

RESULT AND DISCUSSION

Waste management in Grendeng Village is not only related to technical issues such as waste collection, sorting, and handling but also involves several other aspects. This issue is also related to how local governments, community-based organizations, local residents, and universities carry out their respective roles and collaborate in managing environmental

problems (Vasconcelos et al., 2022). These conditions indicate that waste management is part of environmentally friendly policy, the implementation of which requires the involvement of various stakeholders. In this context, Collaborative Governance can be used to understand how relationships among stakeholders are formed and how cooperation is built to achieve environmental management goals (Amin et al., 2023).

Collaborative governance is a process that brings together government and nongovernmental actors within a single framework to work together toward goals that neither party could optimally achieve on its own. (Ansell & Gash, 2008). This framework consists of several key components: initial conditions, institutional structure, supportive leadership, and the collaboration process (Emerson et al., 2012). These four factors help explain how the local government collaborates with the KSM in managing waste in the Grendeng neighborhood. Thus, collaborative governance not only considers the involvement of various parties but also examines how initial conditions, rules, leadership, communication, trust, and commitment influence the course of that collaboration. The following is a detailed description of the results of the analysis and discussion of each aspect :

Starting Condition

The initial stage of collaborative governance relates to the starting conditions of each party involved (Yahya et al., 2025). These conditions include available resources, differences in capacity to take action, prior experience with collaboration, and personal interests that may influence the collaborative process (Arai et al., 2021). In waste management in Grendeng, these conditions are evident in the differences in capacity among the local government, the Kelompok Sarana Mandiri (KSM), the local community, and higher education institutions. This was conveyed by the KSM Grendeng leadership in an interview on October 24, 2025 :

“At the beginning of 2021, it was still just a collection point not like it is now. Then, management facilities were built in each sub-district due to protests from residents. There’s bound to be resistance, especially because of the odor and the impact when it rains, but this site is on state-owned land. In addition, another challenge is that waste collection by the municipal department remains inconsistent due to the large volume of waste, while the collection fleet is limited. In terms of funding, the KSM still relies on community fees of 25,000 rupiah, while the costs for operations, equipment maintenance, and labor are quite significant. The government has also not yet provided direct operational funding to the KSM.”

This statement indicates that, from the outset, waste management in Grendeng has faced complex social, institutional, and resource-related challenges. The Grendeng Community-Based Organization (KSM) plays a crucial role because it is directly involved in waste management at the community level. However, in practice, the KSM still faces challenges related to the availability and quality of the facilities and equipment used. Based on interviews with KSM Grendeng officials, the presence of universities in the vicinity of Grendeng Village also influences waste generation patterns through the activities of students and temporary residents in the area. In fact, according to KSM officials, when activity at Jenderal Soedirman University (Unsoed) decreases during holidays, the volume of waste received by KSM can drop by about 20%. This situation indicates that those who generate waste and those responsible for managing it have different roles and capacities.

These conditions indicate that the Grendeng Community-Based Organization (KSM) has been carrying out waste management functions at the local level but still faces various obstacles in maintaining the sustainability of its activities (*Simanjorang & Harahap, 2026*). The existence of waste treatment facilities is indeed a key asset, but facilities alone are not sufficient to ensure the management system can operate in the long term (*Yudartha et al., 2026*). Financial constraints, infrastructure limitations, social factors, and community behavior also pose major obstacles to the implementation of waste management in developing countries (*Zhang et al., 2024*). This is also evident at KSM Grendeng. Based on interview results, the KSM employs 13 workers with a workday of approximately six hours, but it still faces facility limitations, particularly regarding machinery to handle waste such as wood, fabric, and other types of waste that are difficult to shred. When machinery breaks down, the KSM tends to perform repairs independently because replacing the machinery entails significant costs. Thus, the challenges faced by the Grendeng KSM are not only technical in nature but also relate to how policies are translated into management capacity at the local level.

From an environmental policy perspective, this situation is significant because the success of a policy depends not only on the existence of the policy itself, but also on the ability of individuals or organizations to implement it (*Fernández-i-Marín et al., 2024*). When KSMs act as direct implementers at the local level with limited resources, it is necessary to strengthen relationships with local governments and other parties involved in waste management (*Kusmayanti & Ayuningtyas, 2025*). Based on interview results, KSMs do not receive direct operational funding from the government and, in the early stages, even had to rely on membership fees to cover operational needs and labor costs. Although in 2024 there was a budget of approximately Rp 250 million allocated for equipment and distributed among 50 KSMs, this support has not yet become a source of routine operational funding for the Grendeng KSM. This situation highlights a disparity between waste management needs at the local level and the resources available to the implementing entities.

One of the most prominent issues in waste management at KSM Grendeng is funding. Based on interviews with KSM Grendeng, it was found that the group still relies on community dues of Rp25,000 per household to fund its operational activities. In reality, waste management entails significant costs, ranging from labor expenses, waste collection and transportation, machinery maintenance, facility repairs, to the development of innovative processing methods. When the majority of revenue comes solely from community fees, the KSM's ability to expand its operations is limited. This situation indicates that the sustainability of waste management cannot be entirely dependent on the community's ability to pay these fees. The sustainability of waste management is influenced by the balance between operational costs and revenue generated (*Budhijanto et al., 2024*). Furthermore, not all community-based waste management facilities are able to operate optimally; therefore, an evaluation of facility conditions is necessary before further development can take place (*Munawir et al., 2024*).

In the case of the Grendeng Community-Based Waste Management Group (KSM), the issue of funding cannot be adequately resolved simply by raising community fees. Based on interviews with the Grendeng KSM, community participation in waste management is still largely limited to paying fees. The community has not been significantly involved in the process of sorting organic and inorganic waste, while the KSM remains the party that receives complaints when machinery breaks down or waste collection is delayed. On the other hand, university activities also influence the amount of waste entering the KSM. KSM administrators

noted that during certain events, such as student orientation, the amount of waste can increase, yet there is currently no financial contribution from the university to the KSM. This indicates an imbalance between those who generate the waste and those who bear the burden of managing it.

The presence of student dormitories and university activities in the Grendeng area, for example, needs to be taken into account in the funding scheme because these activities also generate waste that must subsequently be managed by the KSM. This means that the cost of waste management should not be borne solely by households but should also involve parties that generate large amounts of waste or benefit from waste management services. This approach aligns with the development of community-based waste management in Indonesia, which highlights the need to increase producers' contribution to resolving packaging waste issues (*Sulami et al., 2023*). Meanwhile, the growth of waste banks demonstrates that communities can be an integral part of the waste management system while simultaneously generating economic value from materials that still have resale value (*Budihardjo et al., 2022*). Thus, KSM Grendeng does not have to rely entirely on community dues but can develop revenue streams through waste utilization, collaboration with other parties, and market development for processed products.

Institutional Design

The second aspect is institutional design. In collaborative governance, clear institutional rules and mechanisms are needed to regulate procedures, forms of engagement, and the roles and responsibilities of each party involved (*Christensen, 2024*). Community-based waste management in Banyumas demonstrates collaboration between the local government and residents through the “Kelompok Sadar Mitra” (*Islamiati, 2024*). The shift in approach from merely collecting, transporting, and disposing of waste to a management model that involves the community reflects a shift in environmental policy (*Pamuji et al., 2023*). In this context, the community is no longer merely a waste generator but also plays a crucial role in the management process (*Rahmawati & Pratiwi, 2025*).

At the urban village level, there must be clarity regarding the roles of each party, ranging from the local government, village government, KSM, the community, to universities. The KSM plays a role in carrying out waste management activities at the local level, while the government provides support through policies, the provision of facilities, guidance, and institutional strengthening (*Siagian, 2025*). Based on interview results, the Grendeng KSM has carried out these functions through waste collection and management activities by involving workers in daily operations. The community also plays a role in reducing and sorting waste at the source (*Zhou et al., 2022*). However, in practice, waste sorting by the community is still not carried out optimally (*Budihardjo et al., 2021*). On the other hand, universities and students also play a crucial role in this collaboration, given that educational activities contribute to waste generation in the Grendeng area. This is evident from the decrease in waste generation during student breaks, indicating that student activities influence the waste management burden in the area.

Clarity regarding this division of roles is linked to the KSM's capacity to implement and sustain sustainable waste management (*Munawir et al., 2024*). The KSM not only requires funding to carry out its daily activities but also needs an organizational structure capable of

managing funds, building partnerships, accessing assistance, and being accountable for its activities to both the community and the government (*Eales et al., 2020*). Based on interview results, the operational activities of the Grendeng KSM are still supported by community contributions of Rp25,000 per household. On the other hand, the KSM has not yet received direct operational funding from the government, and waste collection by the municipal department has not been consistently carried out. When facilities or machinery break down, the KSM must also handle repairs independently. These conditions indicate that the KSM has established a role and structure in waste management, but the resources available to fulfill that role remain limited. When institutional capacity is not yet strong enough, access to external resources also becomes more limited (*Yudartha et al., 2026*). This is important because community-based waste management ultimately requires not only manpower and facilities but also an organization capable of ensuring the sustainability of its activities (*Jabbar et al., 2026*).

To support this capacity, waste management must also be underpinned by public policy, legal frameworks, collaboration, and participation from various stakeholders all of which are essential components in establishing a sustainable waste management system (*Batista et al., 2021*). Therefore, the role of communities as waste managers must be situated within a broader framework. The government must not only establish or provide facilities for KSMs but also ensure they have the resources to carry out their management functions sustainably (*Eales et al., 2020*). In the context of the Grendeng KSM, such support is crucial because most operational activities still rely on the KSM's capabilities and community dues. Thus, the sustainability of waste management depends not only on the KSM's ability to carry out activities but also on the consistency of support and coordination from all involved parties.

Another issue faced by the Grendeng KSM is community participation. Opposition from some residents regarding the waste treatment facility stems from concerns about odors and leachate, indicating that community acceptance is a crucial factor for the facility's viability. The community does not necessarily reject the goals of waste management, but they may question the potential risks that could arise when such a facility is located in their residential area. This situation highlights that the development of waste treatment facilities must consider not only technical aspects but also social dimensions. Interview results also indicate that community involvement in waste management is not yet fully equitable. Some community members remain passive regarding fee payments and waste sorting, so the burden of management falls largely on the KSM. These conditions indicate that the institutional design of the Grendeng KSM has essentially taken shape through the existence of the KSM and the involvement of several parties, but the implementation of role distribution, resource support, and community participation is still not fully optimized.

Facilitative Leadership

The third aspect is facilitative leadership. Leadership plays a crucial role in the collaboration process because it requires a figure who can bridge differences in interests, foster effective communication, and encourage all parties to work together toward a common goal (*Ansell and Gash, 2008*). In waste management in Grendeng, the local government serves not only as a policy maker but also as a facilitator capable of aligning the interests of the Community-Based Waste Management Group (KSM) with those of other stakeholders involved in waste management. This supportive role is crucial because the KSM has limited resources, whereas effective waste management requires the involvement of various parties

with differing capacities and capabilities (*Sabarna & Ramdani, 2025*). The government can assist by providing the necessary facilities and infrastructure, offering institutional support, enhancing the capabilities of managers, and establishing an effective coordination system among the KSM, the village government, and higher education institutions. Through this approach, the government does not take over the KSM's responsibilities but creates an environment that supports the KSM in carrying out its management duties in a more sustainable manner (*Blackett et al., 2020*).

Based on interview findings, the Grendeng KSM still faces resource and facility constraints in carrying out its waste management activities. Day-to-day operations still rely heavily on the KSM's internal capabilities and community dues, while direct financial support for operational costs from the government is not yet available. When facilities or machinery break down, the KSM must also carry out repairs on its own. These conditions indicate that the government's facilitative role in supporting the KSM still needs to be strengthened, particularly in providing resources and support that can help the KSM sustain its waste management activities.

From a green policy perspective, supportive leadership demonstrates that environmental policies are not merely regulations but also emphasize the government's role in building capacity and fostering collaboration among various stakeholders (*Wolf et al., 2018*). Local governments can serve as facilitators to ensure that waste issues arising from activities in educational settings are not viewed solely as the responsibility of the KSM but are recognized as shared environmental challenges, thereby requiring collaborative efforts and shared responsibility (*Maulana et al., 2025*).

The government's role as a facilitator becomes increasingly important because waste management at the Grendeng KSM involves various stakeholders with differing interests and resources. These include the government, the KSM, the community, universities, boarding house owners, business operators, and the private sector, each of which plays a role in supporting waste management. The government possesses authority and a budget; the KSM has operational experience; the community plays a role in sorting and monitoring; while universities possess knowledge and innovation resources (*Prastya et al., 2024*). However, if these resources operate independently of one another, the challenges faced by the KSM will be difficult to resolve comprehensively.

Interview results indicate that the relationship between KSM and these parties has not yet fully taken the form of structured coordination. KSM still carries out most of its operational activities independently, while the involvement of other parties has not yet been fully directed toward a division of responsibilities and sustainable support. This situation indicates that facilitative leadership still needs to be strengthened so that each party is not only involved in waste management but also maintains clear and mutually supportive working relationships.

Community-based waste management can be organized within a multicentric governance system that is, a system in which various stakeholders and levels of government collaborate to address environmental issues (*Istiyani et al., 2022*). Community initiatives in waste management can flourish when they are connected to the government, civil society organizations, and other stakeholders at various levels (*Istiyani & Handayani, 2022*). These conditions indicate that the challenges faced by the Grendeng Community-Based Organization

(KSM) cannot be resolved solely by enhancing the KSM's internal capabilities but also require collaboration with various stakeholders outside the KSM.

In this regard, Jenderal Soedirman University plays a crucial role. The activities carried out by the university and its students in the Grendeng area are directly related to the waste generated there; therefore, the university's participation should not be limited to educational programs. The university can contribute through collaboration in funding, research on waste management, guidance on community self-help group management, the development of simple technologies, and education on waste sorting for students and the surrounding community. In this way, the university is not merely viewed as a source of waste but also as part of the solution. Given these conditions, facilitative leadership in waste management in Grendeng is already evident through the existence of the Community Self-Help Group (KSM) and the involvement of the government and other stakeholders; however, it has not yet functioned optimally as a collaborative mechanism. The KSM has carried out management functions at the local level but still faces limitations in resources and facilities. Meanwhile, government support and the involvement of other parties have not yet been fully integrated into a strong and sustainable coordination mechanism. Therefore, strengthening facilitative leadership is necessary to bring together the resources of the government, the KSM, the community, and the university so that the responsibility for waste management does not rest solely on the KSM.

Collaborative Process

Collaborative management involves open communication, trust-building, a commitment to the collaborative process, and a shared agreement on the goals to be achieved (*Vihma, A., 2021*). These four elements form the foundation for all parties to understand each other's interests, needs, and challenges. In waste management in Grendeng, the involvement of various parties does not necessarily indicate that collaboration is proceeding effectively. Therefore, ongoing communication and dialogue are needed to build trust, strengthen commitment, and encourage all parties to work together toward achieving waste management goals.

Open communication is necessary so that all parties can understand each other's needs and the challenges they face. The KSM needs to clearly articulate its needs regarding facilities, equipment, funding, and operational support required for waste management (*Pasaribu et al., 2026*). Based on interview findings, the Grendeng KSM still faces limitations in funding and facilities, while some operational needs are still covered by the KSM through community dues and its internal resources. These conditions indicate that communication between the KSM, the government, and other involved parties needs to be continuously improved (*Shahreza et al., 2020*). These needs should be understood as part of the collaborative process, not merely viewed as internal matters of the KSM (*Ardianto et al., 2025*). Thus, the government can use these conditions as a basis for determining the appropriate form of assistance (*Jabbar et al., 2026*). On the other hand, universities and the community also need to understand that waste management does not focus solely on the transportation stage but includes efforts to reduce and sort waste at the source (*Haksevenler et al., 2022*).

Ongoing dialogue can help build a shared understanding regarding environmental management (*Toumbourou et al., 2025*). The goal of collaboration extends beyond merely reducing the volume of waste sent to final disposal sites; it also encompasses efforts to establish a waste management system tailored to the needs and characteristics of the local community

(Asih *et al.*, 2026). Therefore, commitment from all stakeholders is crucial, given that long-term waste management success cannot rely solely on the efforts of the Community-Based Management Group (KSM) operating at the local level (*Journal of Governance and Public Affairs*, 2024). In the context of Grendeng, stakeholder involvement is already evident; however, this commitment needs to be strengthened so that it does not remain limited to participation in specific activities but evolves into sustained cooperation.

In addition to communication and commitment among stakeholders, community involvement is a vital aspect of waste management in Grendeng. Some residents oppose the presence of waste processing sites due to concerns about unpleasant odors and leachate. This situation highlights that community acceptance is a key factor in the sustainability of waste processing facilities (Astuti *et al.*, 2025). Research findings indicate that such concerns are a primary reason for the opposition expressed by some residents regarding the waste processing facility. Such opposition does not necessarily imply a lack of support for waste management efforts; rather, it often stems from concerns about potential impacts if the facility is located within their residential area. Consequently, the development of waste processing facilities must consider not only technical aspects but also social conditions and the concerns of the surrounding community (Rahardyan *et al.*, 2004).

Community involvement is particularly important because residents are the ones who generate waste on a daily basis (Dhokhikah *et al.*, 2015). If the community does not sort waste at the source, the Community-Based Waste Management Group (KSM) must expend additional effort and incur extra costs to separate mixed waste. Furthermore, improved government services do not necessarily translate into increased public participation in waste management (Nizar *et al.*, 2022). This is also evident in research indicating that the majority of the surveyed population has not received adequate information and remains insufficiently involved in waste sorting or recycling activities (Pandyaswargo *et al.*, 2025).

These findings align with the situation faced by KSM Grendeng, where the community's habit of sorting organic and inorganic waste at the source remains poor. Interview results indicate that a portion of the community does not actively sort their waste, resulting in a significant amount of mixed waste being received by KSM. This situation renders the waste processing operation less efficient (Kawai & Huong, 2017). Yet, sorting waste at the source can enhance the value of waste that is suitable for reuse or recycling (Rousta *et al.*, 2016). Consequently, source-based waste sorting and increased community participation are crucial components of waste management strategies, particularly in developing nations (Zhang *et al.*, 2024).

Community participation in waste management in Grendeng also requires a broader understanding. Residents should not merely act as service recipients or fee-payers; they also need to be involved in decision-making and oversight processes (Garnett & Cooper, 2014). In the case of KSM Grendeng, the payment of fees represents an existing form of engagement, yet this participation has not fully translated into active involvement in waste sorting and management. Experiences with community-based waste management in Tinjomoyo, Semarang, demonstrate that the presence of community-level waste management institutions can positively influence residents' knowledge and behavior regarding waste management (Sekito *et al.*, 2013). This indicates that local waste management organizations serve not only as processing facilities but also as vehicles for fostering better community waste management

habits (*Sekito et al., 2013*). This process also highlights the importance of collaboration in implementing environmentally sustainable policies (*Koebele, 2020*). Environmental policies can be more effective when the community has the opportunity to participate and tailor implementation to the specific needs of each region (*Drazkiewicz et al., 2015*). Thus, collaboration serves as a bridge between government-established environmental policies and the environmental conservation activities undertaken by the community in their daily lives (*Ulibarri et al., 2023*). In the context of Grendeng, this process still faces challenges, as community participation, communication, and support among stakeholders have not yet consistently functioned as intended.

Amidst these various challenges, KSM Grendeng possesses assets that can be further developed. The processing of organic waste into compost demonstrates that the KSM does not merely perform waste collection functions but has also begun to generate added value from waste (*Pamuji et al., 2023*). This activity has the potential to evolve into a source of additional income if supported by appropriate technology, human resource capacity, and a clear market (*Oviedo et al., 2025*). Experiences with waste banks in Yogyakarta indicate that community-based waste management can yield social impacts including economic benefits and job creation and is influenced by social capital elements such as trust, norms, networks, and reciprocity (*Haryanti et al., 2023*).

Developing this economic value aligns with circular economy principles, which encourage waste management in developing nations to move beyond a focus on disposal and instead harness the value inherent in the waste itself (*Zhang et al., 2024*). In the context of Grendeng, organic waste can continue to be processed into compost, while inorganic waste can be directed toward sorting and the sale of materials with economic value (*Soesanto et al., 2021*). Such measures can reduce the volume of waste requiring disposal while simultaneously creating an additional revenue stream for the KSM.

Given these conditions, a collaborative process for waste management in Grendeng is underway but has not yet reached its full potential. While communication and engagement exist among the KSM, the government, the community, and universities, the process lacks sustained communication, consistent commitment, and active community participation. Nevertheless, the existing composting activities demonstrate that the KSM has established practices that can serve as a foundation for further collaborative development. Consequently, strengthening communication, enhancing community participation, and fostering cooperation among stakeholders are essential to ensure that collaboration extends beyond mere operations and effectively supports the long-term sustainability of waste management in Grendeng. Findings in this regard support previous research indicating that collaborative governance integrates deliberation, trust, and collaboration among actors throughout the policy cycle to produce development programs that are not only technically sound but also inclusive and sustainable (*Noor et al., 2022; Setiawandari & Kriswibowo, 2023*).

Based on these four aspects, waste management in Grendeng demonstrates that efforts to strengthen collaborative governance must focus on establishing more structured cooperation among the local government, community-based waste management groups (KSM), and other relevant stakeholders. Stakeholder involvement serves as a vital resource in community-based waste management. However, the mere presence of these parties does not guarantee successful cooperation; effective collaboration requires a clear division of tasks, adequate resource

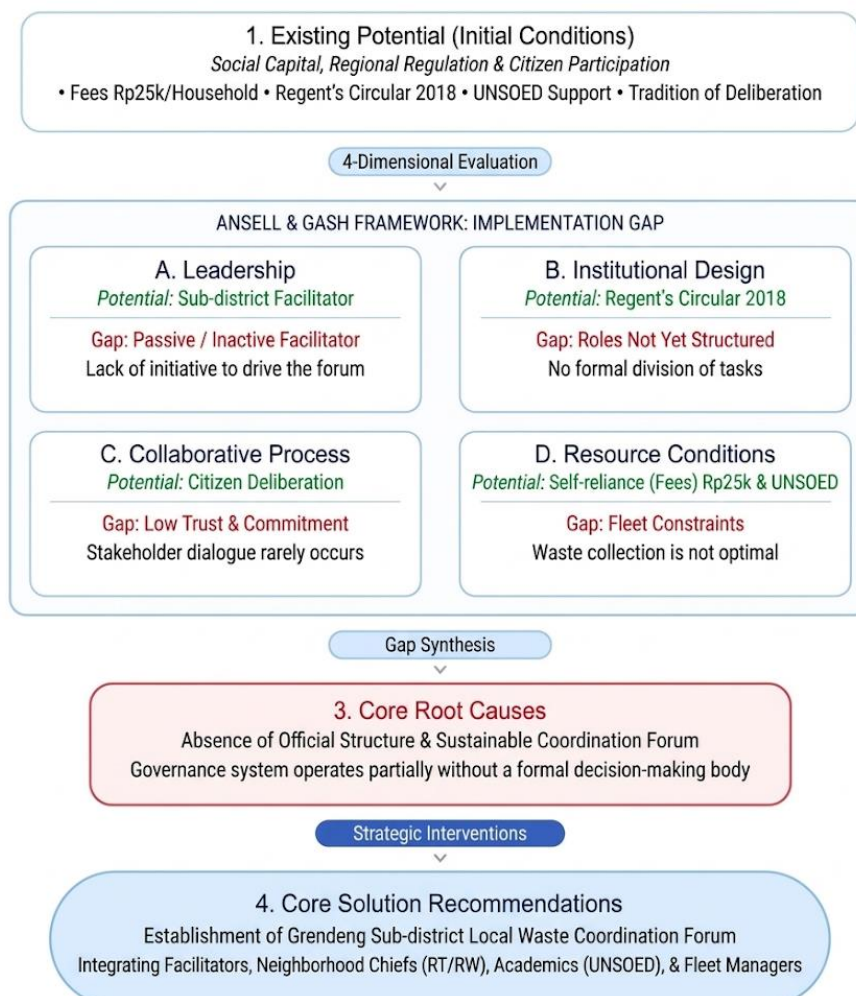
support, leadership that fosters cooperation, and continuous communication throughout the management process.

Overall, the challenges facing Grendeng's KSM stem not only from limited waste processing facilities but also from the absence of a system capable of simultaneously integrating financing, institutional structures, community participation, and collaboration among actors. Adequate facilities cannot be utilized sustainably without the support of maintenance funding (*Ezeudu et al., 2025*). Similarly, financing mechanisms will not be effective if the management institutions lack strength (*Munawir et al., 2024*). Furthermore, even with good facilities and institutions, waste management outcomes may remain suboptimal if the community continues to mix waste at the source (*Muktiningsih et al., 2026*). Strengthening collaborative governance can be achieved through several measures. First, the local government needs to periodically evaluate KSM requirements to ensure that the support provided whether in the form of facilities, equipment, or training aligns with the specific conditions and needs of each area (*Jabbar et al., 2026*). Second, a coordination system is required to bring together the local government, KSMs, village authorities, local communities, and higher education institutions to regularly discuss the various challenges and needs associated with waste management (*Ardianto et al., 2025*). Third, higher education institutions as one of the parties contributing to waste generation in Grendeng need to be included in collaborative networks, particularly in efforts to reduce and sort waste at the source. Fourth, the institutional capacity of KSMs needs to be strengthened so that the sustainability of waste management does not rely solely on the efforts of specific individuals (*Atmojo et al., 2022*).

Consequently, efforts to strengthen KSM Grendeng should focus on a collaborative, community-based waste management model. In this model, the local government acts not merely as a provider of aid but as a facilitator ensuring adequate technical, institutional, and financial support for the KSM. While the KSM remains the primary manager at the local level, it does not have to shoulder the entire burden of waste management alone. The community is involved in decision-making and oversight, and higher education institutions serve as partners in innovation and education, while businesses and major waste generators can be engaged to help provide funding. This collaborative approach demonstrates that collaborative governance can be an effective means of implementing environmental policies at the local level. Environmental policies cannot be realized solely through the formulation of regulations and waste management targets; their implementation requires cooperation between the government and the community (*Fatmawati et al., 2022*). In Grendeng, the collaboration between the local government and the KSM is crucial because the KSM possesses an understanding of community conditions and practical experience in local waste management, whereas the government holds the authority, funding sources, and capacity to formulate policies (*Hertati et al., 2022*). When these capabilities are combined with support from higher education institutions and the community, waste management can evolve into a more collaborative and sustainable activity for addressing environmental issues.

Through this approach, waste management is no longer viewed as the responsibility of a single party but as a collective effort requiring the integrated involvement of various stakeholders (*Batista et al., 2021*). By strengthening relationships among these stakeholders and developing more diverse funding sources, KSM Grendeng has the opportunity to become a waste management organization that not only sustains its operations but also delivers environmental, social, and economic benefits to the community.

Ultimately, collaborative governance in waste management in Grendeng should be understood as a means to support the more effective implementation of environmental policies, rather than as an end in itself (Newig *et al.*, 2023). Cooperation among actors can facilitate the design and execution of waste management strategies tailored to local needs (Mukhlis *et al.*, 2025). Furthermore, stakeholder engagement can encourage the community to actively participate in maintaining environmental cleanliness and health (Sabarna & Ramdani, 2025). Therefore, strengthening cooperation between the local government and relevant parties should focus on clearly defined roles, the provision of necessary resources, open communication, and consensus on shared goals (Pasaribu *et al.*, 2025). This is crucial for supporting the implementation of more effective and sustainable environmental policies at the local level (Firdausy, 2025). Thus, the implementation gap observed with KSM Grendeng should not be interpreted as a failure of the community-based approach, but rather as an indication that the approach requires a more robust support system. The challenge lies not in replacing the role of KSM, but in ensuring that KSM does not have to operate in isolation when managing waste. Sustainable waste management is more likely to be achieved when the government, community, higher education institutions, and the business sector have clearly defined roles, adequate resources, and consistent cooperation mechanisms (Mukaromah, 2025). The following is a summary of the findings from this study:



CONCLUSION

Overall, community-based waste management in Grendeng Urban Village, utilizing a collaborative governance approach, is underway but not yet fully optimized. This is evident from the involvement of the local government, the urban village administration, Community Self-Help Groups (KSM), the community, and higher education institutions in waste management activities. Such involvement demonstrates that collaborative efforts have been established, even if they lack a structured and sustainable trajectory. Several issues persist, particularly regarding poor coordination among stakeholders, unclear role allocation, inconsistent community participation, and limitations in resources and funding. These conditions indicate that the primary challenge for waste management in Grendeng is not a lack of involved parties, but rather the absence of a working system capable of consistently linking the roles and resources of each stakeholder.

Further findings highlight coordination as the area most in need of improvement. Coordination issues impact task allocation, resource utilization, communication, and the sustainability of the collaboration. Consequently, one actionable step is to establish a waste management coordination forum at the Grendeng Urban Village level, leveraging existing stakeholders and activities. This forum could involve the urban village administration, KSMs, the community, higher education institutions, and major waste generators. Periodic meetings could be held to address straightforward agenda items: identifying current issues, determining the parties responsible for addressing them, and agreeing on a timeframe for resolution. Meeting outcomes should be documented and reviewed in subsequent sessions to ensure that coordination leads not merely to discussion, but to tangible follow-up actions.

The role of higher education institutions needs to be clearly defined so that they do not merely remain repositories of knowledge and innovation. These institutions can be engaged in activities specifically required by the KSM (Community-Based Waste Management Group), such as mapping waste volume and types within educational precincts, educating students and the public on waste sorting, providing management training, developing simple record-keeping systems, or conducting research to help resolve KSM-related challenges. Such activities can be discussed in coordination forums to ensure that the involvement of higher education institutions has a clear purpose and is not merely sporadic.

The community and major waste generators must also be positioned as part of the solution. The community's role extends beyond paying service fees; residents need to sort waste at the source and help monitor management practices in their local area. Meanwhile, major waste generators including higher education institutions must reduce and sort the waste they produce and can be involved in supporting management activities. This approach ensures that the burden of waste management does not fall entirely on the KSM once the waste has been collected.

Ultimately, strengthening collaborative governance in Grendeng Urban Village does not require the creation of numerous new programs. It is more important to improve existing cooperation patterns, particularly through routine coordination that yields tangible results. The government acts as a facilitator, the KSM remains the primary implementer, the community participates in sorting and monitoring, higher education institutions provide targeted support, and major waste generators take responsibility for the waste they produce. If this model operates consistently, the involvement of various stakeholders will evolve beyond mere

individual participation into more focused and sustainable cooperation in waste management within Grendeng Urban Village..

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