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Collaborative Governance in Urban Waste Management Reform in Semarang City

Ahmad Zaini Miftah[1], Fadli Al Farizi
[1]Universitas Padjadjaran
[2]Universitas Wanita Internasional
E-mail:a.z.miftah@unpad.ac.id com. No. HP yg dpt dihubungi -

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Abstract: Urban waste management has become a major challenge for local governments due to rapid urbanization, population growth, and increasing consumption patterns that contribute to higher waste generation. Addressing these challenges requires not only effective government policies but also the active involvement of multiple stakeholders in managing waste sustainably. This study aims to analyze the implementation of collaborative governance in urban waste management in Semarang City and to examine how cooperation among government institutions, community organizations, private sector actors, and citizens contributes to improving environmental management. The research adopts a qualitative case study approach to explore collaborative waste management practices implemented by the Semarang City Government. Data were collected through semi-structured interviews with government officials, community leaders managing waste banks, and residents participating in waste management programs, supported by document analysis and field observations. The findings indicate that collaborative governance has strengthened community participation in waste reduction initiatives, particularly through community-based waste bank programs that encourage household waste sorting and recycling activities. Collaboration with private recycling companies also supports the sustainability of waste management initiatives by creating economic value from recyclable materials. However, several challenges remain, including uneven levels of community participation, limited recycling infrastructure, and the need for stronger coordination among government agencies. The study highlights the importance of strengthening stakeholder collaboration, expanding environmental education programs, and improving institutional coordination in order to enhance the effectiveness of urban waste management. The experience of Semarang City demonstrates that collaborative governance can serve as an effective strategy for promoting sustainable environmental management and improving public administration practices in urban contexts

Keywords: Collaborative Governance, Urban Waste Management, Community Participation, Environmental Governance, Local Government

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INTRODUCTION

Urban waste management has become one of the most pressing challenges faced by local governments in rapidly growing cities. Increasing population density, urban expansion, and changing consumption patterns have significantly contributed to the rising volume of municipal solid waste in urban areas. Local governments are therefore required to develop more effective waste management systems that not only focus on waste collection and disposal but also promote sustainable waste reduction and recycling practices (UNEP, 2021).

Traditional waste management approaches often rely heavily on government institutions as the primary actors responsible for managing waste services. However, the complexity of waste management challenges has demonstrated that government-centered approaches alone are insufficient to address environmental problems effectively. Waste management requires cooperation among multiple stakeholders, including government agencies, private sector actors, community organizations, and citizens (Ansell & Gash, 2008).

In this context, the concept of collaborative governance has gained increasing attention in public administration research. Collaborative governance refers to the process through which public institutions

engage non-governmental stakeholders in collective decision-making and policy implementation to achieve shared public goals (Emerson & Nabatchi, 2015). Through collaborative governance mechanisms, governments can integrate the resources, knowledge, and capabilities of various stakeholders in addressing complex policy challenges.

Waste management represents a policy area where collaborative governance plays an important role. Effective waste management systems require coordination among government agencies responsible for environmental management, private waste service providers, recycling industries, and community-based waste management initiatives. Community participation is particularly important because waste generation and waste sorting practices occur primarily at the household level.

In Indonesia, urban waste management has become a major concern for many local governments due to the increasing volume of municipal waste generated in urban areas. The Indonesian government has introduced various policies aimed at improving waste management practices, including waste reduction initiatives, recycling programs, and community-based waste management systems. These policies encourage local governments to collaborate with community organizations and private actors to develop more sustainable waste management strategies.

Semarang City is one of the major urban centers in Indonesia that has actively implemented waste management reforms through collaborative governance approaches. As a rapidly developing metropolitan area, Semarang faces significant challenges related to waste generation and environmental sustainability. In response to these challenges, the Semarang City Government has implemented various initiatives involving collaboration with community groups, environmental organizations, and private waste management actors.

One example of collaborative waste management initiatives in Semarang is the development of community-based waste banks and recycling programs. Waste banks encourage residents to sort recyclable materials and exchange them for economic incentives. These programs involve collaboration between local government institutions, community organizations, and residents in managing waste at the neighborhood level.

The implementation of collaborative waste management programs reflects the increasing recognition that environmental governance requires active participation from multiple stakeholders. Through collaboration, local governments can leverage community participation and private sector involvement to improve the effectiveness of waste management systems.

However, collaborative governance initiatives also face several challenges. Differences in institutional interests, limited coordination among stakeholders, and variations in community participation levels may influence the effectiveness of collaborative programs. In addition, maintaining long-term collaboration among stakeholders requires strong leadership and clear governance mechanisms (Emerson & Nabatchi, 2015).

Despite the growing adoption of collaborative governance approaches in environmental management, empirical research examining how collaborative mechanisms influence waste management outcomes at the local government level remains limited. Understanding how collaboration functions in practice is essential for evaluating the effectiveness of collaborative governance strategies.

Therefore, this study aims to examine the role of collaborative governance in improving urban waste management in Semarang City. By analyzing how local government institutions collaborate with community organizations and other stakeholders in waste management initiatives, this research seeks to provide insights into how collaborative governance can contribute to more sustainable urban environmental management.

METHOD

This study employs a qualitative research approach to examine the implementation of collaborative governance in urban waste management reform in Semarang City. A qualitative approach was selected because it allows for a deeper understanding of how collaboration among stakeholders occurs in the process of managing urban waste and how various actors interact in implementing waste management initiatives. Through this approach, the study seeks to explore the perspectives and experiences of government officials, community organizations, and other stakeholders involved in collaborative waste management programs.

The research design adopts a case study approach focusing on the collaborative waste management initiatives implemented by the Semarang City Government. The case study method is appropriate for investigating complex governance processes within a specific policy context and allows researchers to examine real-world practices in detail (Yin, 2018). Semarang City was selected as the research locus because it has

actively developed community-based waste management programs, including waste bank initiatives and recycling programs that involve cooperation between government institutions and community groups.

Data were collected through several qualitative data collection techniques. First, semi-structured interviews were conducted with key informants who are directly involved in waste management programs in Semarang City. These informants included government officials from the Environmental Agency of Semarang City, community leaders managing waste banks, representatives of environmental organizations, and local residents participating in community-based waste management initiatives. The interviews aimed to explore the roles of different stakeholders, the mechanisms of collaboration, and the challenges faced in implementing waste management programs.

Second, document analysis was conducted to examine official government regulations, policy documents, program reports, and strategic plans related to waste management and environmental governance in Semarang City. These documents provided insights into the institutional framework, policy objectives, and administrative procedures used in implementing collaborative waste management initiatives.

In addition, field observations were carried out to examine the implementation of community-based waste management programs, particularly waste bank activities and recycling practices in selected neighborhoods. These observations helped provide a better understanding of how collaboration between government institutions and community groups operates in practice and how local residents participate in waste management activities.

The collected data were analyzed using thematic analysis. This method involves organizing qualitative data, coding key information, identifying recurring themes, and interpreting patterns related to collaborative governance practices (Braun & Clarke, 2006). Through thematic analysis, the study identified several important themes related to stakeholder collaboration, community participation in waste management, institutional coordination, and challenges faced in implementing collaborative governance initiatives.

To ensure the credibility and validity of the research findings, this study applied data triangulation by comparing information obtained from interviews, document analysis, and field observations. Triangulation helps strengthen the reliability of qualitative research findings by ensuring that conclusions are supported by multiple sources of evidence (Denzin, 2017). Through this methodological approach, the study aims to provide a comprehensive understanding of how collaborative governance contributes to improving urban waste management in Semarang City.

RESULTS AND DISCUSSION

The results of this study show that collaborative governance plays an important role in strengthening urban waste management in Semarang City. The collaboration between government institutions, community groups, and private actors has contributed to the development of more participatory waste management practices. Based on interviews, document analysis, and field observations, several key findings emerged regarding stakeholder roles, community participation patterns, and the effectiveness of collaborative waste management programs.

Stakeholder Roles in Collaborative Waste Management

One of the main findings of this research is that waste management reform in Semarang City involves the active participation of multiple stakeholders who carry different but interconnected responsibilities in the overall waste management system. The Environmental Agency of Semarang City acts as the primary governmental institution responsible for formulating waste management policies, coordinating environmental programs, and supervising the implementation of waste management activities across the city. This agency also plays an important role in designing strategic programs aimed at reducing waste generation, promoting recycling initiatives, and improving environmental awareness among residents. Through regulatory frameworks and program supervision, the Environmental Agency ensures that waste management policies are implemented consistently across various districts within the city.

In addition to the role of government institutions, community groups have become key actors in implementing waste management practices at the grassroots level. Community-based organizations and neighborhood associations are responsible for managing waste bank programs that operate within residential areas. These waste banks function as local collection centers where residents can deposit recyclable materials such as plastic, paper, metal, and glass. The collected materials are recorded as savings or exchanged for small

economic incentives, which encourages residents to participate in waste sorting and recycling activities. Through these initiatives, community groups play a crucial role in promoting environmentally responsible behaviors and reducing the amount of waste that ultimately reaches landfill sites.

Furthermore, the private sector also contributes significantly to the waste management ecosystem in Semarang City. Private recycling companies and waste processing businesses support the system by purchasing recyclable materials collected by community waste banks and processing them into reusable raw materials. This collaboration between community groups and private recycling industries helps create a circular economy in which waste materials are transformed into valuable resources rather than being discarded as environmental pollutants. The presence of private sector actors also helps ensure the sustainability of recycling activities by providing stable market demand for recyclable materials.

The collaboration among these stakeholders demonstrates the practical implementation of collaborative governance in environmental management. Each stakeholder contributes specific resources and expertise that complement one another. Government institutions provide regulatory frameworks and administrative support, community organizations mobilize citizen participation at the neighborhood level, and private sector actors facilitate the recycling process and resource recovery. This integrated system allows waste management responsibilities to be shared across multiple actors, making the overall waste management strategy more effective and sustainable.

The distribution of stakeholder roles can be summarized in the following table

Stakeholder	Main Role	Contribution to Waste Management
Local Government (Environmental Agency)	Policy formulation and program coordination	Develop waste management policies, provide facilities, and monitor programs
Community Groups	Community-based waste management	Manage waste banks and encourage waste sorting at the household level
Private Sector	Recycling and waste processing	Purchase recyclable materials and support recycling activities
Citizens	Waste producers and participants	Participate in waste sorting and recycling programs

This collaboration allows waste management activities to be distributed across different actors, reducing the burden on government institutions while encouraging community participation in environmental management.

Community Participation in Waste Bank Programs

Community participation is another important factor influencing the success of collaborative waste management initiatives in Semarang City. The effectiveness of community-based waste management programs largely depends on the willingness of residents to actively engage in waste reduction and recycling practices at the household level. In this context, waste bank programs have become one of the most prominent mechanisms used to encourage citizen involvement in environmental management activities. These programs promote the practice of separating recyclable waste materials from household waste before disposal, which helps reduce the volume of waste transported to landfills.

Waste bank programs operate through a community-based management system in which residents are encouraged to sort recyclable materials such as plastic bottles, paper, cardboard, metal, and other reusable items. After sorting the waste, residents deposit these materials at community-managed waste banks that are typically organized by neighborhood associations or local environmental groups. The waste deposited by residents is weighed and recorded by waste bank administrators, creating a system similar to a savings account in which the value of recyclable materials is accumulated as financial savings for participants.

The recyclable materials collected through waste banks are later sold to recycling companies or waste processing industries that convert these materials into reusable products. Through this mechanism, waste that would normally be discarded becomes part of a recycling chain that supports the development of a local circular economy. The financial value obtained from selling recyclable materials is distributed to participating residents either in the form of direct payments, savings accounts, or community welfare programs.

The presence of economic incentives plays an important role in motivating community participation in waste management activities. Although the financial rewards are relatively modest, they provide tangible benefits that encourage residents to consistently participate in waste sorting and recycling practices. In many cases, the waste bank system also helps foster a sense of collective responsibility among community members, as residents work together to maintain environmental cleanliness and manage household waste more sustainably.

In addition to economic incentives, waste bank programs also contribute to increasing environmental awareness within local communities. Residents who participate in these programs gradually develop a better understanding of the

environmental impacts of waste and the importance of waste reduction practices. Educational activities such as environmental workshops, recycling campaigns, and community meetings organized by waste bank administrators further strengthen community engagement in waste management initiatives. Through these combined efforts, community participation becomes a key driving force in supporting the long-term sustainability of collaborative waste management programs in Semarang City.

The level of community participation observed in several neighborhoods is presented in the following table.

Participation Indicator	**Observation Result**
Household waste sorting	Increasing in neighborhoods with active waste banks
Community involvement in waste banks	Moderate to high in organized communities
Participation in environmental campaigns	Growing due to local government education programs
Recycling awareness	Increasing among younger residents and community activists

The results indicate that community participation tends to be higher in areas where environmental awareness campaigns and community leadership are actively promoted. Local leaders and environmental volunteers often play important roles in motivating residents to participate in waste management programs.

Effectiveness of Collaborative Waste Management Programs

The collaborative governance approach adopted in Semarang City has produced several positive outcomes that can be observed from environmental, social, and economic perspectives. One of the most visible impacts is the reduction in the volume of waste sent to landfill sites as a result of increased recycling activities at the community level. Through the implementation of community-based waste bank programs, residents are encouraged to sort and collect recyclable materials before disposing of their household waste. This practice significantly reduces the amount of inorganic waste that would otherwise be transported to final disposal facilities. By diverting recyclable materials such as plastic, paper, and metal from the waste stream, these programs help extend the lifespan of landfill sites and reduce environmental pollution caused by unmanaged waste accumulation.

In addition to reducing waste volume, the recycling activities supported by waste bank programs also contribute to improving environmental sustainability within the city. Residents who actively participate in waste sorting practices become more aware of the importance of responsible waste management and environmental protection. Over time, this awareness helps promote environmentally friendly behaviors within communities, including reducing the use of single-use plastics and encouraging the reuse of materials whenever possible. As a result, waste bank programs not only function as waste collection mechanisms but also serve as educational platforms that foster environmental awareness among residents.

Beyond environmental improvements, the implementation of collaborative waste management programs also generates significant social benefits for local communities. Waste bank initiatives encourage residents to participate in collective environmental actions, such as organizing waste sorting activities, managing recycling operations, and participating in neighborhood cleaning campaigns. These activities create opportunities for community members to interact and work together toward shared environmental goals. As a result, the programs strengthen social cohesion and reinforce a sense of collective responsibility for maintaining the cleanliness and sustainability of the local environment.

Furthermore, collaborative waste management programs provide economic opportunities for participating households. Recyclable materials collected through waste banks are sold to recycling companies or waste processing industries, generating financial returns that can be distributed among community members. Although the economic benefits obtained from these activities are relatively modest, they still provide additional income for households and serve as an incentive for continued participation in recycling activities. In some cases, the funds generated through waste bank operations are also used to support community welfare programs, such as neighborhood development activities or social assistance initiatives.

Overall, the positive outcomes generated by collaborative waste management programs demonstrate that environmental governance initiatives can produce multiple benefits when supported by strong cooperation among stakeholders. By integrating environmental protection efforts with social participation and economic incentives, the collaborative governance approach implemented in Semarang City contributes to the development of a more sustainable and community-oriented waste management system.

The effectiveness of collaborative waste management programs can be summarized as follows.

Program Outcome	**Impact**
Waste reduction	Decreased volume of waste sent to landfills
Community engagement	Increased participation in environmental activities
Economic benefits	Additional income through recycling activities
Environmental awareness	Improved public awareness of waste management

These outcomes demonstrate that collaborative governance approaches can improve environmental management by integrating the efforts of government institutions, communities, and private sector actors.

Challenges in Collaborative Waste Governance

Despite the positive outcomes observed in the implementation of collaborative waste management programs, several challenges remain that may affect the long-term effectiveness and sustainability of these initiatives. One of the primary challenges identified in this study is the uneven distribution of community participation across different neighborhoods in Semarang City. While some communities demonstrate high levels of engagement in waste sorting and recycling activities, other neighborhoods show relatively limited involvement in these programs. This variation in participation levels is often influenced by differences in public awareness, access to environmental education, and the organizational capacity of local community groups. In areas where community leaders actively promote waste management initiatives, participation tends to be significantly higher compared to neighborhoods where such leadership or awareness campaigns are absent.

Another important challenge involves maintaining the sustainability of waste bank programs over time. Many waste banks operate on a voluntary basis and rely heavily on the dedication of community leaders, environmental activists, and local volunteers who manage daily operations. These individuals are responsible for organizing waste collection activities, recording recyclable materials deposited by residents, and coordinating with recycling companies that purchase the collected waste. However, because these activities require continuous effort and commitment, maintaining long-term volunteer engagement can be difficult. If community leaders become less active or volunteers lose motivation, the operational performance of waste banks may decline. Therefore, sustained government support and institutional assistance are necessary to ensure that these programs remain functional and effective in the long run.

In addition to social and organizational challenges, logistical limitations also present obstacles to the efficiency of waste management operations. The availability of recycling facilities and the infrastructure required to process recyclable materials remain limited in some areas. In certain cases, waste banks may face difficulties in transporting collected materials to recycling industries due to inadequate transportation systems or limited access to recycling markets. These logistical constraints can reduce the economic value of recyclable materials and discourage community participation if the recycling process becomes inefficient.

Furthermore, coordination among government agencies responsible for environmental management is sometimes insufficient to support the rapid expansion of collaborative waste management programs. Waste management activities often involve multiple institutions, including environmental agencies, community development offices, and urban infrastructure departments. Without effective communication and coordination mechanisms, the implementation of waste management policies may become fragmented across different administrative units.

Addressing these challenges requires a comprehensive approach that strengthens both institutional capacity and community engagement. Local governments need to improve coordination among relevant agencies, invest in recycling infrastructure, and provide continuous training and support for community-based waste management groups. Public awareness campaigns and environmental education programs should also be expanded to encourage broader participation among residents. By strengthening collaboration between government institutions, communities, and private sector actors, Semarang City can further enhance the effectiveness and sustainability of its collaborative waste management initiatives.

Implications for Public Administration

From a public administration perspective, the findings of this study emphasize the importance of collaborative governance as a strategic approach for addressing complex environmental challenges in urban areas. Environmental issues such as urban waste management involve multiple dimensions, including environmental protection, community behavior, economic activities, and institutional coordination. Because of this complexity, waste management cannot be effectively handled by government institutions alone. Instead, it requires active cooperation among various stakeholders, including government agencies, community organizations, private sector actors, and citizens who generate and manage waste at the household level.

Collaborative governance provides a framework that enables public institutions to engage non-governmental actors in the policy implementation process. Through collaboration, local governments can

mobilize community participation, utilize resources and expertise from the private sector, and encourage collective responsibility for environmental sustainability. In the context of waste management, collaboration between stakeholders helps create a more integrated system in which waste reduction, recycling, and environmental awareness initiatives are implemented simultaneously across different levels of society. This participatory governance model also promotes transparency and accountability, as stakeholders are directly involved in monitoring and supporting environmental management programs.

For the Semarang City Government, strengthening collaborative governance mechanisms will require continuous efforts to expand community participation in waste management initiatives. Increasing public awareness through environmental education programs, community campaigns, and training activities can help encourage residents to adopt sustainable waste management practices. In addition, improving institutional coordination among government agencies responsible for environmental management, community development, and urban infrastructure is essential to ensure that waste management programs are implemented consistently across different areas of the city.

Furthermore, providing adequate institutional support for community-based waste management initiatives is crucial for maintaining the sustainability of collaborative programs. Government institutions can support waste bank programs by providing infrastructure, technical training, and financial assistance for community groups involved in recycling activities. Strengthening partnerships with private recycling industries can also improve the efficiency of waste management systems and ensure that recyclable materials collected by communities can be processed effectively.

Overall, the experience of Semarang City demonstrates that collaborative governance can serve as an effective approach for improving urban waste management while simultaneously strengthening community engagement and environmental sustainability. By integrating the efforts of government institutions, community groups, and private sector actors, collaborative governance creates a more inclusive and participatory model of environmental management. This approach not only contributes to reducing waste and improving environmental conditions but also encourages citizens to take an active role in supporting sustainable urban development.

CONCLUSIONS

This study analyzed the implementation of collaborative governance in urban waste management in Semarang City and examined how cooperation among multiple stakeholders contributes to improving environmental management practices. The findings show that collaborative governance has become an important approach for addressing complex urban waste challenges by involving government institutions, community organizations, private sector actors, and citizens in the waste management process. Through collaboration, waste management responsibilities are shared among various stakeholders, allowing for more effective and participatory environmental governance.

The results indicate that community-based waste bank programs play a central role in strengthening collaborative waste management in Semarang City. These programs encourage residents to participate actively in waste sorting and recycling activities at the household level. Community participation not only contributes to reducing the volume of waste sent to landfills but also increases public awareness regarding sustainable waste management practices. The presence of economic incentives through recyclable material collection further motivates citizens to engage in environmentally responsible behaviors.

In addition to community involvement, collaboration with private sector actors has also supported the development of local recycling systems. Recycling companies and waste processing industries provide market access for recyclable materials collected through community waste banks, creating economic opportunities while contributing to environmental sustainability. This collaboration demonstrates how public institutions and private actors can work together to address environmental challenges more effectively.

The study also highlights the importance of institutional coordination among government agencies responsible for environmental management and community development. Effective coordination enables the implementation of waste management programs across different neighborhoods and ensures that policies are translated into practical initiatives at the local level. Government support in the form of policy frameworks, infrastructure development, and environmental education programs has been essential in sustaining collaborative waste management initiatives.

However, several challenges remain in the implementation of collaborative governance in waste management. Differences in community participation levels across neighborhoods indicate that public awareness and community leadership play crucial roles in sustaining collaborative initiatives. In addition, logistical limitations such as inadequate recycling infrastructure and transportation systems for recyclable materials may affect the efficiency of waste management programs. Maintaining long-term community engagement and improving institutional coordination therefore remain important priorities for local governments.

Overall, this study concludes that collaborative governance provides an effective framework for improving urban waste management and promoting environmental sustainability. By integrating the efforts of government institutions, community organizations, and private sector actors, collaborative governance enables more inclusive and participatory environmental management practices. The experience of Semarang City demonstrates that stakeholder collaboration can contribute to reducing urban waste, strengthening community engagement, and supporting sustainable environmental governance in urban areas

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