Community participation in sustainable waste management in Yogyakarta City

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Abstract

The increasing volume of waste in Yogyakarta City has prompted the government to implement the *zero inorganic waste* policy, the success of which largely depends on community participation. This study aims to examine the level of citizen participation in waste management policies to achieve the goals of sustainable development, particularly Goal 11. The research employed a qualitative case study with a descriptive approach, utilizing data collection techniques such as interviews, observations, and document analysis. Interviews were conducted with relevant stakeholders, including the Environmental Agency, *bank sampah* managers, community members, and environmental non-governmental organizations. The findings indicate that community participation in waste reduction tends to be relatively low due to their limited involvement in the policy planning process. Participation remains largely a formality, driven in a top-down manner. Therefore, the government needs to develop a collaborative approach that emphasizes participatory principles from the initial stages of policy planning. In this way, the vision of a sustainable city can be effectively realized.

Keywords: community participation; sustainable development; waste management policy

1. Introduction

Yogyakarta City, as one of the centers of economic and educational growth in Indonesia, faces serious challenges in waste management along with the increasing population and urban activities. The volume of waste generated by the community continues to rise daily, while the capacity of the Final Processing Site (*Tempat Pemrosesan Akhir*, TPA) has reached its maximum limit. According to data from the Environmental Agency (*Dinas Lingkungan Hidup*, DLH) of Yogyakarta City, waste production has exceeded 300 tons per day, of which approximately 60% has not been managed optimally. This problem not only affects environmental quality but also threatens public health and undermines the principles of sustainable development. Although the government has established a *zero inorganic waste* policy as a strategic solution, its implementation at the community level still encounters significant obstacles. Hence, this reality requires an approach that is not only structural and administrative but also participatory, actively involving the community in all stages of waste management.

Academic literature highlights that community participation is a key factor in achieving sustainable waste management, particularly in urban contexts. For example, the study by Darmawan, B., Mulyanto, D. T., & Tahyudin, D. (2019, in Palembang) found that the success of *bank sampah* management depends on community involvement in local *bank sampah* activities. Similarly, research by Ivakdalam, L. M., & Far, R. A. F. (2022) and Puspita, M. (2023) emphasizes that the sustainability of waste management is determined by increased public participation. Communities, as waste producers, are engaged in *bank sampah* activities by collecting, sorting, and depositing inorganic waste with economic value. The waste is then sold to waste dealers (*bandar sampah*), and the *bank sampah* receives money from the sales, which is subsequently deposited into community savings accounts according to the purchase value of the waste.

These studies affirm that the existence of *bank sampah* as a public participation platform can facilitate a sustainable waste management system, provided it is accompanied by citizen awareness and active involvement. Nevertheless, many public participation theories developed in the context of developed countries have not adequately addressed the socio-political complexities at the local level, particularly within the collective culture of Indonesian society. The top-down approach that often dominates environmental policy also tends to create a gap between policy formulation and the social realities of citizens. Therefore, contextual analysis is required that integrates theoretical approaches

with empirical evidence to understand the extent to which communities genuinely participate in implementing sustainable waste management policies in Yogyakarta City.

This study aims to examine the levels and stages of community participation in the implementation of the *zero inorganic waste* policy in Yogyakarta City, as well as to identify the challenges encountered in enhancing citizen involvement. Furthermore, the study also seeks to evaluate whether the existing level of participation has contributed to achieving the 11th Sustainable Development Goal (SDG), namely inclusive, safe, resilient, and sustainable cities and human settlements. By referring to various stakeholders involved—such as the Environmental Agency, *bank sampah* managers, environmental NGOs, and community members—this research seeks to provide a holistic picture of citizen participation dynamics in waste management. Through this approach, the findings are expected to contribute both theoretically and practically to the design of participatory, contextually relevant, and applicable environmental policies.

The urgency of this research lies in the growing demand for a waste management model that does not rely solely on government intervention but also on the collective strength of society. The fact that waste generation continues to increase, while the potential of communities as active subjects in environmental management has not been optimally utilized, indicates a gap between policy and implementation. Meanwhile, the research objectives—which focus on analyzing the levels of community participation in the *zero inorganic waste* policy to achieve the SDGs—underscore the strategic relevance of this study. In this context, the research becomes significant because it offers deeper insights into the factors influencing both the success and failure of community participation. In other words, this study is not only essential for addressing local waste management issues in Yogyakarta but also carries theoretical and practical implications for waste management policies in other urban areas of Indonesia.

2. Method

This study focuses on the phenomenon of the increasing volume of inorganic waste in Yogyakarta City and the extent of community involvement in responding to the sustainable waste management policy designed by the municipal government. The main problem addressed in this research is the gap between the *zero inorganic waste* policy, which began implementation in 2022, and the actual level of community participation in its execution at the grassroots level. As a cultural hub and major tourist destination, Yogyakarta faces serious challenges in managing waste generated from household activities, small-scale industries, and tourism. Although the local government has formulated various policies to encourage behavioral changes among residents, uneven community participation remains a major obstacle to effective policy implementation.

This research employs a qualitative approach with a case study method to gain an in-depth understanding of community participation in sustainable waste management in Yogyakarta City. The case study was chosen because it provides an opportunity for the researcher to comprehensively and holistically explore social realities within real-life contexts. The primary data were obtained through in-depth interviews with key informants, including officials from the Environmental Agency (*Dinas Lingkungan Hidup*), managers of *bank sampah* Lintas Winongo and Mitra Insani, local community members, and representatives of the environmental NGO WALHI. These interviews focused on their experiences, perspectives, and roles in either supporting or hindering the implementation of waste management policies, particularly the *zero inorganic waste* initiative. Secondary data were collected from various sources, including policy documents, local government performance reports, and scholarly literature relevant to the research topic. The diverse involvement of these informants enabled the researcher to obtain balanced and reflective information on multiple perspectives regarding the implementation of the *zero inorganic waste* policy. Participants were selected purposively to ensure that each informant possessed relevant knowledge and experience aligned with the study's focus.

Data collection was carried out using three primary techniques: in-depth interviews, participatory observation, and document analysis. These techniques were applied in a triangulated manner to ensure the validity of the collected data. Data analysis followed the interactive model developed by Miles and Huberman, which includes three key stages: data reduction, data display, and conclusion drawing with verification. To ensure the credibility of the findings, the study employed both source and methodological triangulation. The analysis was conducted within the framework of a case study

approach, aiming to provide a contextual depiction of the dynamics of community participation in waste management. The interpretation of data was not only directed toward understanding empirical conditions but also toward formulating theoretical and practical implications relevant to the development of community-based environmental policies.

3. Results and Discussion

3.1. Results

The waste management policy in Yogyakarta City represents the government's response to the increasing volume of waste, particularly inorganic waste that does not decompose and pollutes the environment. The Yogyakarta City Government implemented the *zero inorganic waste* policy, formalized through mayoral regulations and reinforced by technical programs that directly involve communities through institutions such as *bank sampah* and the TPS3R system. Through this policy, residents are encouraged to sort, process, and recycle waste at its source, namely households. Field observations indicate that almost every village already has community-based waste management infrastructure, such as *bank sampah* and composters. Documentation also shows that the Environmental Agency (*Dinas Lingkungan Hidup*) regularly conducts socialization and evaluation of this program. These efforts reflect an integration of regulatory and participatory approaches as a form of local policy innovation. Nevertheless, implementation still faces challenges in the form of unequal participation levels across different areas of the city. The policy is not only aimed at reducing waste volume but also at promoting sustainable lifestyles among Yogyakarta's urban population.

Interviews with the Environmental Agency reinforce the finding that Yogyakarta's waste management policy has a relatively established institutional structure supported by systematic programs. As stated by Siti Aisyah, Head of the Waste Management Division of Yogyakarta City, in order to support the *zero inorganic waste* target, the Environmental Agency has established monitoring teams in each district tasked with ensuring that *bank sampah* programs operate optimally and are integrated with household-level waste sorting systems. Monitoring conducted by these district teams demonstrates a strong political will from the city government to realize a participatory and sustainable waste management system. However, field observations reveal that the effectiveness of this policy depends heavily on how actively communities perform their roles within the system. Documentation shows significant variations in program implementation between areas, partly due to differences in local leadership and community-driven initiatives. Some neighborhoods have independently developed *bank sampah* systems and actively educate residents, while others remain passive and rely entirely on external initiatives. These findings suggest that although the policy has been designed with both technocratic and participatory approaches, its success is still largely determined by social dynamics at the community level. Hence, the strategic role of local communities becomes crucial in bridging policy with everyday waste management practices.

The descriptions and explanations above illustrate that although the waste management policy is structured and institutionally supported, disparities in its implementation remain evident at the grassroots level. This reinforces the central issue of the study, namely the relatively low effectiveness of the policy due to uneven community participation. This problem can be traced to two main aspects: the community's social capacity to accept and implement the policy, and the government's consistency in conducting guidance and evaluation. Observations show that in some areas, the policy is not fully understood by residents, particularly regarding the technical aspects of sorting and processing inorganic waste. Meanwhile, documentation from socialization activities indicates that the communication approach employed by the government is still top-down in nature, thus insufficiently empowering local communities. This is consistent with interview findings from Wawan, the head of *bank sampah* Lintas Winongo, who stated that "many residents still do not really know how to sort waste, especially inorganic waste. Even though they sometimes attend socialization sessions, it does not necessarily mean they understand or are willing to participate. The community needs continuous education; once is not enough."

Community participation in waste management in Yogyakarta City demonstrates complex and diverse dynamics across regions. Field observations reveal that active participation is more common in communities that have long been established and possess strong community leadership, such as in the Winongo and Kauman areas. In these areas, residents regularly sort their waste, deposit it into *bank*

sampah, and participate in training on inorganic waste processing. In contrast, in other areas, community participation tends to be passive or even absent, as reflected in the minimal activity of *bank sampah* and the low awareness of the *zero inorganic waste* program. Interviews with residents indicate that factors such as education level, work commitments, and perceptions of waste as a burden influence participation levels. Documentation from programs carried out by WALHI and the Environmental Agency also shows that bottom-up participatory approaches are more effective in encouraging citizen engagement compared to one-way formal socialization activities. Thus, community participation should not only be measured by attendance in formal activities but also by the extent to which waste management values are internalized in everyday life. This diversity of participation forms provides important insights into the potential and limitations that must be addressed in the implementation of urban environmental policies.

Field findings further indicate that the success of waste management programs cannot be separated from socially and culturally constructed patterns of community participation. Participation does not emerge spontaneously; rather, it is shaped through consistent processes of education, facilitation, and community-based approaches. Interviews with *bank sampah* managers highlight that one of the main challenges in increasing participation is residents' limited technical understanding and lack of motivation. As expressed by Sulastri, manager of *bank sampah* Mitra Insani: "*Bank sampah* always organizes training for residents on inorganic waste management, but not all residents actively participate. Sometimes they find it troublesome or are not yet accustomed to sorting waste."

This finding is reinforced by observations in several areas, which reveal disparities between policy and its implementation at the grassroots level. Communities that are actively involved generally have prior collective experience in social activities or possess informal leaders capable of mobilizing residents. Documentation from WALHI activities also emphasizes the importance of dialogical facilitation to foster a sense of ownership over waste management programs. From a technical standpoint, some residents reported a lack of supporting facilities such as sorting stations and separate vehicles for organic and inorganic waste. This indicates that community participation largely depends on the availability of supporting structures and the success of empowerment processes conducted by the government and non-governmental organizations. Thus, participation is not merely about attending activities but also about the extent to which people consciously, voluntarily, and sustainably engage in the entire waste management cycle.

Uneven community participation in waste management constitutes one of the root problems in achieving the goals of the *zero inorganic waste* policy in Yogyakarta City. This imbalance highlights a gap between policy and the participatory reality envisioned. As revealed in interviews and observations, community involvement is strongly determined by the capacity of local institutions to consistently foster active engagement. This problem reinforces one of the research objectives, namely to assess the extent to which the level of community participation influences the success of sustainable waste management policy implementation. If citizens do not perceive waste management as part of their interest and responsibility, then the policy will likely stagnate during implementation. Documentation shows that while the government and NGOs have undertaken continuous efforts, not all interventions have successfully changed community behavior. These findings demonstrate that participation should not be understood as mere formal involvement, but must be supported by empowerment processes capable of fostering long-term awareness and commitment. As stated by Rusmiyatun, a resident of RW 5 in Kauman, "some residents here are active in joining the *bank sampah*, but many are still not involved. Sometimes it's not that they don't want to, but rather because no one has invited them or explained the benefits." Therefore, expanding and deepening community participation is crucial for ensuring that waste management policies are implemented effectively and remain relevant to the needs of urban communities such as Yogyakarta.

The relationship between the implementation of waste management policies and sustainable development is highly relevant to addressing the research problem, particularly concerning the achievement of the 11th Sustainable Development Goal (SDG) in Yogyakarta City. Data from interviews, observations, and documentation indicate that the *zero inorganic waste* policy has begun to contribute to the creation of cleaner and more organized settlements, which aligns with the indicators of this SDG. However, the reality also shows that these achievements are uneven, as most progress remains localized or limited to specific active communities. Many areas have yet to experience similar

transformations due to low community participation and insufficient institutional support. This suggests that achieving the SDGs requires a more systemic and inclusive approach. This study underscores that well-designed policies are insufficient without sustained community participation. Therefore, the synergy between waste management policies, community involvement, and the principles of sustainable development forms an inseparable unity in creating resilient, clean, and sustainable urban environments, as mandated in the global development agenda.

3.2. Discussion

Waste management is a series of processes that include the collection, sorting, transportation, processing, and final disposal or recycling of solid waste to prevent environmental pollution and safeguard public health. This definition encompasses technical, administrative, and participatory approaches to managing both the volume and impacts of household and industrial waste. According to Law No. 18 of 2008 on Waste Management in Indonesia, waste management must be carried out in an integrated and sustainable manner, involving various stakeholders including the government, communities, and the private sector. At the international level, waste management also refers to the principles of the circular economy and the 3R approach (Reduce, Reuse, Recycle). A World Bank (2018) study emphasizes that effective waste management enhances the quality of urban life and strengthens environmental resilience systems. Moreover, waste management is regarded as an indicator of sustainable development because it encompasses environmental, economic, and social dimensions. Therefore, waste management should not only focus on technical aspects but also demand active community participation as part of a holistic management system. Hence, participation becomes essential to the successful implementation of waste management policies.

Participation can be defined as the involvement of individuals in group situations that encourage them to contribute to achieving group goals while also taking responsibility for related efforts (Davis, 1990). From Davis's perspective, it can be understood that physical, mental, or intellectual involvement motivates participation and ensures optimal contributions toward achieving objectives. Participation also fosters a sense of ownership, public trust, and responsibility. Because of its importance, participation—whether in the form of support, contribution, or involvement—becomes the key determinant of whether a policy succeeds or fails.

The manifestation of community participation in waste management can be categorized into several forms, ranging from passive to active participation. Arnstein (1969) introduced the concept of the "ladder of participation," which remains relevant in explaining these levels, ranging from manipulation to citizen control. This theory categorizes participation as the degree of citizen power in influencing policy change. According to Arnstein, there are three broad levels of participation further divided into eight rungs. The lowest level, Non-Participation, represents distorted participation, as its purpose is limited to disseminating knowledge and shaping community behavior. At this level, the first rung is manipulation, characterized by one-way communication from the government without citizen dialogue, and the second rung is therapy, which allows limited communication among citizens but remains restricted.

The second level, Tokenism, includes three rungs: information, consultation, and placation. The highest level, Degrees of Citizen Power, grants citizens greater influence in policymaking. At this level, the sixth rung, partnership, reflects the community's ability to negotiate with the government. The seventh rung, delegated power, represents a transfer of authority to citizens, providing them with significant decision-making power.

Based on the research findings, the implementation of the *zero inorganic waste* policy in Yogyakarta City has progressed gradually but has not yet been evenly realized. Community participation varies across different levels, ranging from basic compliance with waste sorting to active involvement in management through *bank sampah* and environmental education activities. Such involvement is influenced by the extent of government-led socialization and the degree to which community leaders are mobilized. However, some areas still show limited awareness and engagement due to a lack of information, skepticism about policy effectiveness, or the absence of supporting infrastructure such as separate waste collection facilities. In this context, community participation cannot yet be considered comprehensive and remains concentrated in areas with proactive leaders and

communities. This suggests that fostering citizen engagement in waste management requires both structural and cultural stimuli simultaneously.

The findings of this study align with Arnstein's ladder of participation theory, showing that community participation in Yogyakarta is at the stage of Degrees of Tokenism—specifically at the fourth rung, Consultation. At this level, community participation does exist; however, citizens lack assurance that their input will be considered by decision-makers (the government). Their likelihood of influencing societal change remains relatively small. Authorities and citizens engage in two-way communication, but participation tends to be merely formal. Aspirations may be collected, yet they are not always realized, such as in meetings with residents where opinions are heard but not necessarily acted upon.

These findings reveal that community participation in waste reduction remains relatively low due to the lack of involvement in the policy planning process. However, this research highlights a critical insight: the success of participation is not solely determined by program design but is largely shaped by the social relationships cultivated within communities. This analytical contribution has not been extensively emphasized in previous studies that predominantly focus on technical aspects. Moreover, community involvement in waste management as a contribution to SDG 11 represents a strategic dimension that has not been widely examined contextually. Thus, this study enriches academic discourse by demonstrating the dynamic relationship between environmental policy and social structures within Indonesia's urban communities.

The reflection from these findings indicates that community participation cannot be developed instantly through structural approaches alone. This study demonstrates that active citizen engagement in waste management requires strengthening in two primary aspects: first, the collective awareness shaped through continuous environmental education, and second, the presence of social structures that support ecological practices in daily life. Accordingly, the research objective of assessing the stages of participation in policy implementation has yielded results that not only explain the position of citizens within the policy framework but also provide evidence that multi-actor collaboration is crucial to achieving policy effectiveness. This is essential as the foundation for building a waste management system that is not only efficient but also ecologically and socially just.

The findings of this research carry significant practical and conceptual implications. Practically, they can serve as a foundation for designing policy interventions that are more adaptive to local contexts. Community involvement in waste management should not be seen as supplementary but must be positioned as a central pillar. Therefore, waste management policies need to be redesigned to involve citizens from the planning stage through to evaluation, including the provision of facilities and the strengthening of institutions such as *bank sampah*. Conceptually, this study calls for a paradigm shift from a technocratic approach to a socio-ecological approach in waste management. Another implication is the necessity for the government to develop community-based monitoring systems to measure the extent to which public participation impacts environmental quality and the achievement of the SDGs.

The results of this study can be understood as a consequence of weak integration between formal regulations and community social practices. One-way policy socialization has failed to foster a sense of ownership among citizens toward waste management programs. In addition, fragmentation of roles between the government, communities, and non-governmental organizations has led to suboptimal coordination among actors. Interviews with officials from the Yogyakarta City Environmental Agency highlight that resource limitations pose serious challenges in providing equal community assistance. This is further supported by field observations showing disparities in facilities and information across regions. Consequently, the lack of inclusiveness in policy implementation has been a major reason why community participation remains sectoral and has not yet become part of the collective culture of waste management.

In response to these findings, several strategic actions are necessary. First, local governments must adopt collaborative approaches that prioritize participatory principles from the earliest stages of policy planning. Second, it is important to strengthen the capacity of local institutions such as *bank sampah* so that they can reach more residents and not rely solely on individual initiatives. Third, environmental education must be reinforced at both school and community levels to instill sustainability values from an early age. Fourth, actors such as NGOs and academics should be encouraged to play active roles in developing community empowerment models that are contextual and locality-based. Fifth, a

participatory incentive system based on tangible results should be applied to sustain behavioral change among citizens. With these measures, sustainable waste management policies in Yogyakarta will be more effective in creating an ecologically resilient and inclusive city.

4. Conclusion

This study finds that community participation in Yogyakarta is positioned within the Degrees of Tokenism—specifically at the fourth rung, Consultation—indicating that public involvement in waste reduction remains relatively low due to the lack of engagement in policy planning processes.

An important finding of this research is that the success of the *zero inorganic waste* program in Yogyakarta is not determined by the strictness of regulations or the sophistication of waste management technologies, but rather by the strength of community-based social participation. The active involvement of residents, including *bank sampah* managers, environmental NGOs, and surrounding communities, demonstrates that close social relations, participatory leadership, and sensitivity to local values are the main catalysts driving the sustainability of waste management. This highlights that the most effective waste management strategy lies not solely in infrastructure or policy, but in how communities are empowered to become the main actors who voluntarily engage in every process.

This study contributes to the development of participation theory and environmental governance within the context of sustainable development. Theoretically, the findings expand the understanding that the success of public policies—particularly in the environmental sector—cannot be separated from the integration of local social, cultural, and political aspects. This strengthens the argument in the literature that participation is not merely a supplementary instrument in policy but constitutes a core variable in achieving sustainability goals. Practically, this research provides new directions for policymakers to design community-based interventions that prioritize dialogical and collaborative approaches rather than relying solely on top-down instructions. The findings are relevant for broader application in environmental policies at both urban and rural levels.

Of course, this study has certain limitations, particularly in terms of geographic scope and the number of participants, which means the results cannot yet be generalized across all regions of Indonesia. However, these limitations open significant opportunities for future research to expand the exploratory dimension, such as by comparing the effectiveness of participation models in urban and rural settings, or by integrating quantitative approaches to strengthen the generalizability of the findings. Furthermore, future research may focus on longitudinal studies to trace the dynamics of community participation over time, while also assessing its impact on other indicators of sustainable development. Thus, this study does not represent an endpoint but rather establishes a strong foundation for the advancement of participatory studies in the field of environmental management moving forward.

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