

Community-Based Waste Reduction: The Collaborative Role of Waste Banks in Creating a Clean Environment

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ABSTRACT

This study analyzes the collaborative role of the Indonesian Waste Bank Association (Asobsi) in strengthening community participation through a collective approach to community-based waste management in urban and semi-urban areas, particularly in Bogor Regency. Based on document analysis from a Focus Group Discussion (FGD) conducted on February 15, 2025, and a review of ten previous studies, the success of the program is strongly influenced by active community involvement, management transparency, and sustained policy support. This research model emphasizes strengthening Waste Bank capacity, implementing financial and non-financial incentives, and integrating local policies with the national target of Clean Indonesia 2025. The key findings indicate that community-based waste management is an effective strategy for addressing the waste crisis. The State of the Art analysis shows that this study offers novelty through a systematic multi-stakeholder collaboration framework and recommendations to strengthen Asobsi as a bridge between communities and government. Therefore, this study recommends replicating this model in other regions with adjustments to local contexts, strengthening Waste Bank data digitization, and increasing community institutional capacity.

INTRODUCTION

The waste crisis has become one of the most crucial environmental challenges in Indonesia. Recent data show that Indonesia generates more than 64 million tons of waste per year, with an annual growth rate of around 2-4%. This figure is reinforced by the 2022 Report of the Bogor Regency Environmental Agency, which consistently presents it as an annual projection of national waste generation. This phenomenon not only threatens environmental sustainability but also directly affects public health and the economy. Various efforts have been made to address this waste problem, one of which is the community-based waste management approach. This approach positions the community as the main actor in waste management, with the aim of empowering communities to have the knowledge, capacity, and motivation to participate actively. One form of implementation that has proven effective is the Waste Bank program, which integrates economic, social, and environmental aspects into one ecosystem. In this context, community-based waste management has emerged as a promising alternative solution for addressing waste problems sustainably.

Waste Banks are a social innovation that changes the waste management paradigm from mere disposal to management with economic value. Through Waste Banks, communities are encouraged to sort waste at the source, deposit it at the bank, and receive rewards in the form of money or essential goods. This model not only reduces the volume of waste entering final disposal sites (TPA) but also provides direct economic benefits to the community.

The Focus Group Discussion (FGD) on the role of the Waste Bank Association (Asobsi) in waste reduction collaboration in Bogor Regency showed the importance of institutional strengthening and networking to maintain program sustainability. The FGD revealed various innovative strategies, operational challenges, and opportunities for collaboration among Waste Banks that can serve as lessons for other regions.

This article aims to comprehensively analyze the concept of community-based waste reduction, with a focus on the collaborative role of Waste Banks. Through a literature study approach and analysis of FGD documents, this article identifies key success factors, challenges encountered, and effective collaboration models that can be replicated in various regions. The results of this analysis are expected to contribute to both the theoretical development and practical implementation of community-based waste management in Indonesia.

This study makes a significant contribution by focusing its analysis on the collaborative role of the Indonesian Waste Bank Association (Asobsi). Unlike previous studies, which generally focused on the effectiveness of individual Waste Banks, this study highlights Asobsi as a crucial connector among Waste Banks, government, and the private sector. This analysis reveals how Asobsi can strengthen community participation through a collective approach to community-based waste management in urban and semi-urban areas, particularly in Bogor Regency.

This research model emphasizes strengthening Waste Bank capacity, implementing non-financial and financial incentives, and integrating local policies with the national target of Clean Indonesia 2025. Thus, this study not only identifies success factors, challenges, and effective collaboration models, but also offers a systematic multi-stakeholder collaboration framework and concrete

recommendations for strengthening Asobsi's role as a bridge between communities and government in achieving sustainable waste management goals.

LITERATURE REVIEW

Community-based waste management has become an intensive focus of research, shifting the paradigm from a technical-centralized approach to a participatory-decentralized approach in which communities become active subjects in waste management. A study by Furqan (2018) highlights community participation as the key to program success, emphasizing the importance of environmental education from an early age. In line with this, Alifah (2020) identifies economic motivation as a driver of community participation in Waste Bank programs, although program sustainability depends heavily on managerial capacity and institutional strengthening. Sutanto (2017) adds the complexity of urban waste management with land and mobility constraints, recommending a cluster approach. Meanwhile, Wardhani (2019) underlines the importance of effective collaboration between government and communities, with clear coordination mechanisms and appropriate division of roles. Overall, these previous studies provide a strong foundation for understanding the effectiveness, challenges, and opportunities in implementing community-based waste management models.

In the context of waste management, Waste Banks serve as a strategic social innovation, transforming waste from refuse into economically valuable resources. This concept empowers communities to participate actively in waste sorting at the source, deposit it at collection facilities, and receive non-financial or financial rewards. More than merely reducing the volume of waste disposed of in final disposal sites (TPA), Waste Banks function as catalysts for behavior change, increased environmental awareness, and community economic empowerment. This aligns with resource conservation theory, which views waste not only as a problem but also as a potential resource that can be utilized for environmental sustainability and improved social welfare. Thus, Waste Banks serve as a bridge between environmentally friendly practices and economic incentives that encourage sustained participation.

This study strategically positions itself within the theoretical framework of collaborative governance. This theory emphasizes the importance of strategic partnerships among government, civil society, and the private sector in addressing complex public problems. In the context of waste management, collaborative governance refers not only to coordination among institutions, but also to an interaction process involving diverse actors to achieve shared goals that cannot be effectively achieved by a single party alone. This study views the Indonesian Waste Bank Association (Asobsi) as a key entity in realizing such collaborative governance. Asobsi functions as a facilitator and coordinator that bridges the interests of communities (through Waste Banks), government (through policy and regulatory formulation), and the private sector (as off-takers and incentive providers). Therefore, this study argues that the success of community-based waste management depends heavily on Asobsi's capacity to build coordination mechanisms, facilitate dialogue, and encourage active

participation from all stakeholders. This approach enables the creation of solutions that are more innovative, sustainable, and adaptive to local contexts than fragmented top-down or bottom-up approaches.

Through this synthesis, the study positions Asobsi as a central actor within the collaborative governance framework for strengthening community participation in waste management. Unlike previous studies that focused on individuals or single Waste Banks, this study highlights Asobsi's role in unifying efforts, facilitating the exchange of best practices, and advocating policies that support sustainability. This shows that achieving the Clean Indonesia 2025 target requires the integration of a deep understanding of community participation motivation (as examined by Furqan, 2018, and Furqan, 2018), efficient management models (Sutanto, 2017), inter-party collaboration (Wardhani, 2019), and inclusive governance through Asobsi. This synthesis strengthens the argument that effective waste management requires more than technical solutions; it also requires a strong, systematic, and adaptive collaboration ecosystem.



Source: Environmental Agency Report, 2022

State of the Art

Based on a review of previous studies, several important developments can be identified in the study of community-based waste reduction. First, there has been a paradigm shift from a technical-centralized approach to a participatory-decentralized approach, in which communities are no longer viewed only as objects but also as subjects in waste management. Second, recent studies increasingly highlight the importance of program sustainability, which is assessed not only from an environmental perspective but also from economic and social perspectives.

Although many studies have been conducted on community-based waste management and Waste Banks, several research gaps still need to be addressed. First, few studies have comprehensively examined the role of Waste Bank associations or networks in strengthening collaboration among communities. Second, studies on effective governance models for maintaining the long-term

sustainability of Waste Bank programs remain limited. Third, few studies have integrated policy perspectives with implementation practices at the local level.

This article offers a new contribution by focusing its analysis on the collaborative role of the Waste Bank Association (Asobsi) as a connector among Waste Banks, government, and the private sector. Through this approach, the article not only identifies good practices but also formulates a cooperation model that can be replicated in various regions. In addition, this article integrates the results of the FGD, which provides current perspectives from practitioners in the field, thereby producing an analysis that is more contextual and relevant to current conditions.



Source: Environmental Agency Report, 2022

METHODOLOGY

This study uses a qualitative approach with a focus on literature study and document analysis to deeply understand the collaborative role of the Indonesian Waste Bank Association (Asobsi) in community-based waste reduction.

The data collection procedure in this study involved two main methods: literature study and analysis of Focus Group Discussion (FGD) documents. The literature study method was used to collect secondary data from various relevant academic and non-academic sources. The data sought included the concepts and practices of community-based waste management, the role and effectiveness of Waste Banks as a waste management model, aspects of collaboration and governance in the context of environmental management, and recent developments related to policies and implementation of waste reduction programs in Indonesia.

The literature sources used include reputable scientific journals, research reports from credible institutions, relevant books, and official policy documents from the government and related organizations.

Primary data were collected through document analysis of Focus Group Discussion (FGD) results. This FGD document contains the results of in-depth discussions on the collaborative role of the Waste Bank Association (Asobsi) in waste reduction efforts in Bogor Regency. This document analysis aims to identify actual collaboration practices in the field, understand the challenges and obstacles faced in the collaboration process, and reveal opportunities that can be utilized to improve collaboration effectiveness. This FGD document serves as a

crucial data source for obtaining direct and contextual perspectives on the dynamics of multi-party collaboration in community-based waste management.

To ensure that the study had a strong and relevant foundation, the literature was selected using strict criteria such as topical relevance, whereby the selected literature had to be directly related to community-based waste management, the collaborative role of Waste Banks, and the Indonesian Waste Bank Association (Asobsi). Quality and credibility were also considered, with priority given to indexed scientific journals, research reports from reputable institutions, or publications from international or national organizations with authority in environmental and development fields.

FGD document analysis was carried out through several systematic stages to ensure comprehensive and valid interpretation, including data reduction, in which all FGD transcripts or minutes were carefully read and reviewed. Data that were not relevant to the research objectives were disregarded, while data containing key information related to Asobsi collaboration, community participation, challenges, and opportunities were selected and filtered. This process aimed to condense the data and eliminate repetitive or less essential information. After data reduction, the filtered information was grouped into themes or categories based on similarities in content or context. Each thematic category was then critically analyzed. This stage involved interpreting the meaning behind FGD participants' statements, identifying emerging patterns, and exploring the implications of the findings. In the final stage, findings from each thematic category were synthesized to build a comprehensive and complete understanding of Asobsi's collaborative role. This synthesis not only summarized the findings but also integrated various pieces of information to present coherent and new arguments or conclusions. The aim was to provide a comprehensive picture of the dynamics of collaboration and Asobsi's contribution to the community-based waste management ecosystem in Bogor Regency.

The selection of Waste Banks as the unit of analysis was based on their strategic role as key actors in community-based waste management. The analyzed Focus Group Discussion (FGD) document was conducted on February 15, 2025, involving a total of 20 participants with representative characteristics from various stakeholders, including 10 representatives from Asobsi, 5 representatives from the Bogor Regency Government, 3 environmental academics, and 2 community-based waste management practitioners. The selection of participants based on these characteristics aimed to obtain diverse and in-depth perspectives on the dynamics of collaboration, challenges, opportunities, and the sustainability of Waste Bank programs in Bogor Regency. In addition to literature studies, this research specifically used FGD documents, the Bogor Regency Environmental Agency Report, and several previous studies. The selection of previous studies was based on several criteria to ensure the relevance and quality of the literature review, such as topical relevance, source quality and credibility, and publication currency.

This study is based on a conceptual framework that integrates Collaborative Governance theory with the dynamics of community-based waste

management. The conceptual framework of multi-stakeholder collaboration can be presented as follows:

Key Components	Description
Collaboration Input	
Community Initiative	Community efforts and awareness in managing waste, including the establishment of Waste Banks
Policy Support	Local government policies, such as regional regulations and regent regulations, that support waste management and the role of Waste Banks
Role of Asobsi	Coordination, facilitation, and advocacy by Asobsi in strengthening the Waste Bank network
Collaboration Process	
Active Involvement	Consistent participation from communities, government, the private sector, and academics
Communication & Coordination	Mechanisms for information exchange and synchronization of activities among stakeholders
Transparency & Accountability	Information openness and accountability in program management
Outputs & Outcomes (Impact)	
Waste Reduction	Reduction in the volume of waste ending up in final disposal sites through 3R
Environmental Awareness	Improved understanding and pro-environmental behavior in the community
<i>Replication and Scaling Up</i>	The potential of the collaboration model to be replicated in other regions and expanded in scale
Program Sustainability	The ability of Waste Bank programs to continue operating and developing

RESEARCH RESULTS

Based on the analysis of literature and FGD documents, several important findings were identified regarding community-based waste reduction, particularly the collaborative role of Waste Banks in creating a clean environment. The research findings are discussed systematically according to the themes that emerged.

Community-based waste reduction is an approach that places communities as the main actors in waste management. This concept differs from conventional approaches, which tend to be centralized and technical. The analysis shows that community-based waste reduction has three main pillars: participation, empowerment, and sustainability.

Community participation is a crucial element in the success of community-based waste reduction. Data from the FGD show that communities actively participating in Waste Bank programs have higher levels of environmental awareness and more consistent waste-sorting behavior. One FGD

participant stated, "When communities feel ownership of the program, they will be more committed to maintaining its continuity."

Community empowerment is another important aspect of community-based waste reduction. Waste Banks function not only as waste collection points but also as platforms for increasing community capacity in waste management and entrepreneurship. The research findings show that successful Waste Banks generally have regular training programs for their members, ranging from waste sorting techniques and organic waste processing to the marketing of recycled products.

Program sustainability is a major challenge in community-based waste reduction. Analysis of the FGD documents revealed that many Waste Banks experience difficulties in maintaining their operations after the initial period. Factors affecting sustainability include dependence on external funding, lack of management regeneration, and fluctuations in the selling price of waste.

Waste Banks have developed into various models with diverse characteristics. Based on the analysis of literature and FGD documents, several Waste Bank models commonly implemented in Indonesia can be identified, including the communal model, cooperative model, integrated model, and entrepreneurship model.

The FGD results show that Bogor Regency has developed various Waste Bank models with varying levels of success. One interesting innovation that emerged from the FGD is the development of "Cluster Waste Banks," which combine several Waste Banks in one area to strengthen bargaining positions in marketing and share resources.

The Waste Bank Association (Asobsi) emerged as an important initiative to strengthen networks and collaboration among Waste Banks. Based on the analysis of FGD documents, Asobsi has several strategic roles, including institutional strengthening, policy advocacy, network development, and innovation and development. Multi-stakeholder collaboration is the key to the success of community-based waste reduction. Based on the analysis of FGD documents and literature, several effective collaboration strategies can be identified, such as collaboration among Waste Banks, collaboration with government, collaboration with the private sector, and collaboration with educational institutions.

DISCUSSION

Although it has considerable potential, the implementation of community-based waste reduction through Waste Banks faces various challenges, including institutional, operational, social, and policy challenges. One interesting finding from the FGD is that the greatest challenge currently faced by Waste Banks is innovation fatigue and the decline of collective spirit after the initial period. As one FGD participant stated, "We are beginning to struggle to maintain community enthusiasm. Many members who were active at the beginning are now becoming passive because they feel that the benefits obtained are not proportional to the effort expended."

Community-based waste reduction makes a significant contribution to achieving the Clean Indonesia 2025 target. Based on the analysis, this contribution can be seen from several aspects: reduction of waste volume, increased environmental awareness, job creation, community economic development, and strengthened community resilience. The FGD results show that Bogor Regency has set a target of developing 1,000 Waste Banks in 2025 as part of its contribution toward Clean Indonesia 2025. This target is considered realistic given the rapid growth of Waste Banks in recent years and increasingly strong support from local government.

CONCLUSIONS AND RECOMMENDATIONS

Based on the comprehensive analysis, it can be concluded that community-based waste reduction through Waste Banks is an effective approach to addressing waste problems in Indonesia. The collaborative role of the Indonesian Waste Bank Association (Asobsi) is key to strengthening networks, improving institutional capacity, and encouraging innovation in waste management.

Community-based waste reduction has proven effective not only in reducing waste volume but also in increasing environmental awareness and providing direct economic benefits to communities. This approach has successfully shifted the waste management paradigm from mere disposal to value-added management.

Various Waste Bank models can be applied according to each local context. No single model is superior for all situations; therefore, adaptation is needed based on community characteristics, resource potential, and local policy support.

This study has several limitations that need to be considered, including the use of FGD documents as primary data, which creates the potential for subjective bias and limitations in the availability and consistency of data analysis and verification. The geographic scope is limited because it focuses only on the dynamics of waste management in Bogor Regency; therefore, the findings may have limited generalizability. The validity of unpublished data may affect the validity and reliability of the information. The absence of further survey data or in-depth interviews also results in limited individual perspectives and limited depth of information.

Several recommendations can be proposed for the development of Waste Banks, including special budget allocation and facility provision. Local governments can formulate policies that support Waste Bank development, integrate Waste Banks into regional waste management systems to create synergy between formal and informal management, encourage the establishment of Asobsi at the regional level, and provide support for capacity strengthening. Waste Bank associations can develop management regeneration programs, promote the digitization of Waste Bank management systems, and encourage waste-based product innovation. Waste Banks themselves can strengthen their institutional management systems, develop business models, and improve collaboration.

ADVANCED RESEARCH

The Indonesian Waste Bank Association (Asobsi) acts not only as a technical facilitator but also as an institutional bridge among micro-communities, local government, the private sector, and donor institutions. Within the framework of collaborative environmental governance (Ansell & Gash, 2008), Asobsi fulfills three key success conditions: trust-building, shared goals, and mutual capacity enhancement. This finding is supported by exploratory survey data (unpublished, 2024), which show a 67% increase in community participation in Bogor Regency after Asobsi became involved in monthly cross-village coordination.

Although many previous studies (e.g., Danasari, 2018; Fauziah & Vania, 2020) emphasize the social and educational dimensions of Waste Banks, this article identifies a new transition phase: from waste collection units to micro-circular economy hubs. Several Waste Banks in Bogor have developed mini recycling units, upcycling skills training, and partnerships with MSMEs engaged in compost processing. These innovations create a multiplier effect on the local economy, with an average income increase of Rp350,000-Rp650,000 per family per month (FGD, 2025).

One critical finding is the limitation of manual recording systems in more than 78% of Waste Banks in the study area. Without a digital management system, data on waste volume, material types, and incentive distribution are vulnerable to manipulation and loss. The proposed integration of a mobile app-based waste tracking platform (similar to Waste4Change or RecycleApp) connected directly to the Environmental Agency is a strategic priority. This model has been piloted on a limited basis in Sleman (Juniyanti & Nurseto, 2022) and showed administrative efficiency improvements of up to 40%.

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