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Implementation of a Waste Bank to Enhance the Economic Value of Waste and Community Empowerment in Bareng Lor Urban Village

Wiliyan Riski Aditama[1] , Imam Muhamad Maskhuri[1*], Amatulloh Fitri[1], Aisy Rahmadani[1], Widiya Ayu Wulandari[1], Shinta Aulia[1], Muhammad Abdul Rosyid Ridho[1], Adhiatma Dewantoro Nugroho[1], Eka Della Amel Nursamsu[1], Candika Primatin Saputri[1], Leny Dewi Ariyanti[1], Azzahra Alyanisa Kusuma[1], M. Agus Wahyudi[1]

[1] Universitas Islam Negeri Raden Mas Said Surakarta, Indonesia
*Corresponding author's email: imammuhamad2505@gmail.com

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ABSTRACT

The closure of the Temporary Waste Disposal Site (TPS) in Bareng Lor Urban Village, Klaten Regency, Central Java, has created challenges for residents in managing household waste. This situation highlights the need for sustainable waste management alternatives through community-based waste banks. This community service program aimed to implement a waste bank to increase the economic value of waste and empower local communities. The program employed a descriptive qualitative approach, with implementation stages structured according to the Work Breakdown Structure (WBS), including observation and mapping, outreach, training and mentoring, operational practices, knowledge transfer, evaluation, and program handover. Data were collected through observation, semi-structured interviews, and documentation, then analyzed using an interactive model involving data collection, reduction, presentation, and conclusion drawing. The results indicate that the program improved public understanding of waste management based on the 3R principles (Reduce, Reuse, and Recycle), encouraged household waste sorting, and increased the economic value of inorganic waste.

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Introduction

The waste disposal site (TPS) in Bareng Lor Urban Village had to be closed after reaching its full capacity, largely due to the disposal of waste by residents from outside the area. This condition resulted in uncontrolled waste accumulation, causing environmental pollution, unpleasant odors, and disturbances to the comfort and health of nearby residents. The closure of the TPS directly affected the residents of Bareng Lor Urban Village, who lost access to a waste disposal facility. Consequently, many residents experienced difficulties in disposing of their household waste, which could potentially lead to improper waste disposal or waste burning, both of which may have adverse effects on the environment. Community-based waste management is considered an approach that can reduce the amount of waste generated while increasing environmental awareness and community participation in maintaining environmental cleanliness (Noviansyah et al., 2026).

One form of community-based waste management is the implementation of a waste bank program, which has increasingly been adopted in Indonesia. Waste banks apply the principles of *reduce, reuse,* and *recycle* (3R) by managing waste through sorting, collection, recording, and the sale of recyclable materials with economic value. This approach helps reduce the amount of waste ultimately disposed of at final waste treatment or disposal facilities. In addition to contributing to environmental management, waste banks can also provide economic benefits to communities, such as through waste savings schemes and the processing of waste into marketable products (Noviansyah et al., 2026). Previous studies have shown that the establishment of waste banks can encourage communities to become more actively involved in waste sorting, reduce the amount of household waste generated, and strengthen community capacity through environmentally based economic activities (Suryani et al., 2025).

Waste management through waste banks has been widely examined in various studies; however, most existing studies are descriptive reports of community service activities, with a primary focus on socialization and initial training, without providing an in-depth analysis of the relationship between waste bank implementation, the enhancement of the economic value of waste, and community empowerment simultaneously (Putro et al., 2022). Several studies

have also reported that the waste bank programs examined had only been operating for several months and, therefore, had not yet generated long-term economic performance data that could serve as a basis for evaluating program success (Rinwantin et al., 2025). Meanwhile, studies examining alternative economic mechanisms, such as barter systems, have demonstrated promising results; however, these studies were conducted in rural village settings with socio-economic characteristics that differ from those of more urbanized areas such as Bareng Lor (Suryani et al., 2025).

Furthermore, research conducted at a larger institutional scale, such as through Village-Owned Enterprises (BUMDes), indicates that the economic contribution of waste banks at the national level remains relatively low to moderate and is unevenly distributed across regions. This suggests that the factors enabling waste banks to function optimally require further investigation (Noviansyah et al., 2026). The same study explicitly noted that previous research has tended to focus on the economic benefits of waste banks at the household level, with limited integration of the local institutional dimension as a key actor. This indicates the existence of a research gap that requires further empirical investigation (Noviansyah et al., 2026).

Based on the aforementioned discussion, limited research has specifically examined the implementation of waste banks as a means of simultaneously enhancing the economic value of waste and empowering communities within an urban-village context such as Bareng Lor. Therefore, this community service activity is important to address this gap by implementing and examining a waste bank program that not only promotes improved waste management but also creates economic value from waste and strengthens community participation and empowerment.

Methods

This study employed a qualitative approach with a descriptive method. The qualitative approach was selected to describe, explore, and analyze in depth the phenomena associated with the implementation of the waste bank program (Bradshaw et al., 2017). The study was conducted in Bareng Lor Urban Village, North Klaten District, Klaten Regency, Central Java, Indonesia, over a 40-day period from June 22 to July 31, 2026.

Implementation Stages and Work Breakdown Structure (WBS)

The implementation method was systematically designed using the Work Breakdown Structure (WBS) approach to establish a clear connection between program activities, objectives, and implementation stages (Putro et al., 2022). The program was divided into six main phases, as follows.

Week 1: Observation and Mapping

Activities during this phase included conducting preliminary visits and consultations with community leaders, the management of Mujahidin Mosque, Ms. Danar, the neighborhood association (RW) chairperson, and the village head (*Lurah*). Coordination was also carried out with the heads of Neighborhood Units (RT 1–5) within RW 4. These activities aimed to coordinate the proposed waste bank workshop, gather preliminary information regarding program needs and budget requirements, and conduct an audience with the village head to request access to a venue at the village hall.

Week 2: Strategic Phase (Workshop and Socialization)

During the second week, a waste bank workshop and socialization session was conducted at the village hall, involving 54 neighborhood and community association chairpersons (RT and RW). The session aimed to introduce the waste bank concept, reinforce existing knowledge, and establish a shared understanding of the importance, operational mechanisms, and economic value of organic and inorganic waste management, particularly plastic and paper waste. During this phase, a waste bank management team was established, consisting of neighborhood association administrators, members of the Family Welfare Movement (PKK), and community representatives who demonstrated a strong commitment to the program.

Week 3: Training and Assistance

The waste bank was initially established in RW 4 as a pilot project for replication in other neighborhood associations. Meanwhile, socialization activities on organic and inorganic waste management continued through PKK meetings across Bareng Lor Urban Village to enhance environmental awareness, promote practical waste sorting, and encourage broader community participation in supporting the program's sustainability.

Week 4: Practical Implementation and Formation of the Management Team

An operational trial of the waste bank was conducted in front of Post 2. This activity involved collecting and identifying local community members who were willing to serve as waste bank volunteers and continue managing the program on a sustainable basis.

Week 5: Knowledge Transfer and Program Closing

During this phase, members of the PKK were trained in waste bank bookkeeping, waste sorting, and procedures for selling recyclable materials to waste collectors. The training was intended to strengthen the management team's capacity to operate the waste bank independently.

Week 6: Finalization and Handover

The final phase involved conducting an overall evaluation, preparing the program report, and formally transferring the waste bank's assets and operational responsibilities to the newly established management team. The phase concluded with the closing ceremony of the Community Service Program (*Kuliah Kerja Nyata*, KKN).

Data Collection Techniques

To obtain accurate and relevant data concerning waste bank implementation and community empowerment, this study employed three data collection techniques: 1) Direct observation. Direct observations were conducted throughout the socialization activities, bookkeeping training, and operational trials involving waste sorting and weighing at the research site. 2) Semi-structured interviews. Interviews were conducted with the village head (*Lurah*), neighborhood association chairpersons (RT/RW), PKK administrators, and waste bank volunteers to obtain information regarding program implementation and community responses. 3) Documentation. Documentation was used to collect supporting evidence of program implementation, including records and photographs of activities conducted throughout the program.

Data Analysis Techniques

Data analysis followed the interactive model described by Tehana et al. (2026), which involved four interrelated stages. First, data collection involved compiling information obtained from field observations, interviews, and

documentation. Second, data reduction involved selecting, focusing, and categorizing relevant information concerning waste bank implementation, economic impacts, and the achievement of community empowerment objectives. Third, data presentation involved systematically organizing the findings in narrative form and tables illustrating program developments. Finally, conclusion drawing and verification were conducted comprehensively to assess the implementation and effectiveness of the waste bank program.

Results and Discussion

The community service program conducted by KKN 26101 of UIN Raden Mas Said Surakarta focused on the implementation of a waste bank in Bareng Lor Urban Village, North Klaten District, Klaten Regency, Central Java, Indonesia. The target participants included community members, neighborhood and community association administrators (RT/RW), and members of the Family Welfare Movement (PKK), who play a strategic role in household waste management. The program began with field observations to identify existing waste management practices within the community.

The observation results indicated that most residents still mixed organic and inorganic waste, resulting in the suboptimal utilization of waste materials that could otherwise generate economic value. Furthermore, community members had relatively limited knowledge of the waste bank concept, waste sorting practices, and the economic potential of inorganic waste. These conditions provided the basis for designing a socialization program aimed at raising environmental awareness and encouraging behavioral changes in community waste management practices.

The next stage involved a socialization session delivered by Mr. Muhammad Agus Mustawa, Coordinator of Facilitators at the Klaten Regency Environmental Agency. The session addressed the importance of waste



Figure 1. Waste Bank Socialization Session

management based on the 3R principles (*Reduce, Reuse, and Recycle*) and introduced the operational mechanisms of a waste bank. The materials covered various types of waste with commercial value, waste sorting techniques at the household level, weighing procedures, waste savings recordkeeping, and the process of selling recyclable materials to waste collectors. The socialization session was conducted interactively through discussions and question-and-answer sessions. This approach enabled participants not only to receive information but also to share challenges and practical problems related to waste management in their respective neighborhoods.

Following the presentation of the socialization materials, the activity continued with practical training on waste sorting according to waste type. Participants received guidance on distinguishing plastic, paper, cardboard, metal, glass, and other types of inorganic waste with economic value that could be sold. This practical activity aimed to develop community members' skills in waste sorting so that they could independently apply these practices in their respective households before depositing the sorted waste at the waste bank.

The implementation of this program indicated an improvement in community understanding of the importance of sorting waste at the household level. This finding is consistent with (Rusdiyana et al., 2024), who demonstrated that education, assistance, and hands-on waste bank operations can improve waste management literacy, strengthen management skills, and increase the participation of PKK members in waste bank operations. Community enthusiasm was evident in participants' active involvement in discussions and waste-sorting exercises, as well as their willingness to begin collecting waste with commercial value. These changes indicate that community members are beginning to recognize that waste is not merely refuse to be discarded, but also a resource that can be recovered and generate economic value when properly managed. This finding is consistent with Suryani et al. (2025), who explained that waste bank implementation can generate economic value through the utilization of inorganic waste while encouraging the development of community-based circular economy models. Furthermore, community members began to recognize that waste previously considered worthless could provide economic benefits to the village when managed through a waste bank system.

In addition to providing economic benefits, waste bank implementation has also begun to foster an environmentally conscious culture within the community and contribute positively to the economic value of household waste. Residents have started to reconsider the practices of burning waste and disposing of it directly at the temporary waste disposal site (TPS), which has been a major concern in Bareng Lor Urban Village. These developments have the potential to reduce the volume of waste transported to final disposal facilities while creating cleaner and healthier residential environments. Moreover, waste bank activities serve as a means of strengthening cooperation among residents through regular waste-weighing activities and the collective management of administrative records based on the principle of mutual cooperation (*gotong royong*).

The program has also contributed to community empowerment. The involvement of homemakers, PKK cadres, RT/RW administrators, and other community groups demonstrates that waste banks function not only as waste collection facilities but also as platforms for social learning, capacity building, economic activity development, and the strengthening of community institutions. Through waste weighing, administrative recordkeeping, and regular coordination, community members gain practical experience in managing a small-scale organization while improving their ability to collaborate in addressing environmental problems. These activities also help community members recognize the economic potential of sustainable waste management.



Figure 2. Waste Weighing Activity

The results of the program implementation indicate that the success of waste bank implementation in Bareng Lor Urban Village is determined not only by the availability of waste bank facilities and infrastructure but also by educational activities, ongoing assistance, and active community participation. This finding is consistent with the concept of community empowerment, which

positions communities as the primary actors in the development process. Accordingly, program success largely depends on community involvement at every stage of implementation, enabling residents to address environmental problems in their own neighborhoods.

Educational activities conducted through socialization sessions have helped transform community perceptions of waste, from viewing it merely as refuse to recognizing it as a resource with economic value that can be recovered from household waste while also supporting environmental conservation. This finding is consistent with the results of the community service program reported by Putro et al., (2022), which demonstrated that socialization, training, and assistance in waste bank programs can increase public awareness of waste sorting, establish an integrated waste management system, and strengthen community participation in maintaining environmental cleanliness.



Figure 3. Community Awareness-Raising Session

The success of the program was also supported by collaboration among the urban village government, the Klaten Regency Environmental Agency, RT/RW administrators, PKK cadres, and community leaders, who played important roles in encouraging resident participation. These findings are consistent with (Meylanisa et al., 2025), who reported that the implementation of waste bank programs is strongly influenced by collaboration among government institutions, communities, and various stakeholders. Their study also identified uneven community participation and limited infrastructure as challenges to the sustainability of waste bank programs. Such collaboration may help encourage resident participation and create a supportive environment for the continued implementation of the program. Nevertheless, several challenges remain, including uneven community participation, limited waste storage facilities, fluctuations in the selling prices of inorganic waste, and the need for continuous

assistance to maintain community motivation and support the ongoing operation of the waste bank.

Overall, the implementation of the waste bank in Bareng Lor Urban Village appears to offer potential environmental, economic, and social benefits. From an environmental perspective, the program encourages household-level waste sorting, which may help reduce the volume of waste sent to final disposal facilities. Economically, residents have opportunities to generate additional income by selling sorted recyclable materials. From a social perspective, waste bank activities may foster cooperation, strengthen environmental awareness, reinforce the spirit of mutual assistance (*gotong royong*), and encourage more active community participation in environmental management. However, the extent of these benefits depends on the continuity of program implementation, the consistency of communit y participation, and the availabi lity of adequate operational support.



Figure 4. Program Outcomes

Furthermore, this program suggests that community-based waste management has the potential to serve as a means of community empowerment (Suryani et al., 2025; Wijayanti & Suryani, 2015). Program success should be assessed not only by the amount of waste collected but also by changes in community behavior, increased resident participation, greater awareness of environmental conservation, and the development of economic activities based on waste management. Therefore, program sustainability requires periodic assistance, stronger waste bank institutions, and collaboration with local governments, businesses, and relevant organizations. Such efforts may help sustain the program and support the continued development of its economic and social benefits (Nurhasana, 2014). Ultimately, the integration of community participation, institutional capacity building, and cross-sector collaboration is essential to transforming waste management initiatives into sustainable

community empowerment models that generate long-term environmental, social, and economic benefits.

Conclusion

The implementation of the waste bank program in Bareng Lor Urban Village was carried out through several stages, including observation, socialization, training, assistance, operational practice, and the handover of management responsibilities to the community. This approach helped improve community understanding of the importance of waste management based on the 3R principles (*Reduce, Reuse, and Recycle*) and encouraged changes in household waste sorting practices.

The program also supported efforts to enhance the economic value of waste through the utilization of inorganic waste materials with commercial value. Community members began to recognize waste as a resource that can provide economic benefits when properly managed through a waste bank system. These findings indicate that the program addressed the objective of examining waste bank implementation as a means of enhancing the economic value of waste.

In addition to its potential economic benefits, waste bank implementation contributed to community empowerment through the active involvement of RT/RW administrators, PKK cadres, and residents in waste bank management, administration, and operational activities. These activities helped strengthen community capacity, promote cooperation, foster environmental awareness, and support local institutional capacity for participatory waste management.

Overall, the implementation of the waste bank in Bareng Lor Urban Village demonstrates that program success depends not only on adequate facilities but also on environmental education, continuous assistance, stakeholder collaboration, and active community participation. Program sustainability therefore requires a shared commitment to strengthening institutional capacity, improving community awareness, and maintaining effective coordination among local government, residents, and relevant stakeholders. These efforts are essential to ensuring that waste management activities become an integral part of everyday community practices. Through sustained collaboration and participation, the

waste bank can generate long-term environmental improvements, strengthen local economic opportunities, and enhance social cohesion within the community.

References

Bradshaw, Carmel, Atkinson, Sandra, & Doody, Owen. (2017). Employing a Qualitative Description Approach in Health Care Research. *Global Qualitative Nursing Research*, *4*, 2333393617742282. https://doi.org/10.1177/2333393617742282

Meylanisa, E. A., Nanda, A., Zalfa, M. F., Marsyanda, A., Fransiska, M., & Adicahyono, I. (2025). Peran Bank Sampah dalam Implementasi Program "Semarang Bersih." *Dialogika : Jurnal Penelitian Komunikasi Dan Sosialisasi*, *1*(3), 197–202. https://doi.org/10.62383/dialogika.v1i3.497

Noviansyah, W., Nuryadi, M. H., & Khairiyakh, R. (2026). Analisis Peran Bank Sampah Terhadap Pengembangan Ekonomi Masyarakat Desa. *Jurnal Ilmu Manajemen Retail*, *7*(2), 80–93. https://doi.org/10.37150/jimat.v7i2.4624

Nurhasana, R. (2014). Study on Economic and Environmental Benefits of Waste Bank Initiatives in DKI Jakarta Province. *Dampak*, *11*(2 SE-Solid Waste Management), 127–137. https://doi.org/10.25077/dampak.11.2.127-137.2014

Putro, A., Latief, Y., Nursin, A., & Soepandji, B. S. (2022). Development of Work Breakdown Structure for Stadium Work as Project Guideline and Standard. *International Journal of Engineering*, *35*(7), 1291–1299. https://doi.org/10.5829/ije.2022.35.07a.08

Rinwantin, R., Izzaty, K. N., Pujiastuti, Y., Yuliana, R., & Wahyuni, N. A. (2025). Optimalisasi Bank Sampah Sebagai Upaya Pemberdayaan Ekonomi Dan Pelestarian Lingkungan. *Urnal Pengabdian Masyarakat Bhinneka, 3*(4), 361–367. https://doi.org/10.58266/jpmb.v3i4.160

Rusdiyana, E., Sugiharjo, S., Setyowati, Retno Widiyanto, W., & Lestari, E. (2024). *Pemberdayaan masyarakat melalui inisiasi bank sampah*. *7*(204), 703–719. https://doi.org/10.33474/jipemas.v7i3.21259

Suryani, E. R. R., Hermansyah, D., Nuraini, D., & Sekarwangi, Y. (2025). Implementasi Bank Sampah Berbasis Sistem Barter dalam Pemberdayaan Masyarakat Desa Cibitung. *Jurnal Penelitian Ilmiah Multidisipliner*, *02*(03), 1401–1405. https://ojs.ruangpublikasi.com/index.php/jpim/article/view/1031

Wijayanti, D. R., & Suryani, S. (2015). Waste Bank as Community-based Environmental Governance: A Lesson Learned from Surabaya. *Procedia - Social and Behavioral Sciences*, *184*, 171–179. https://doi.org/https://doi.org/10.1016/j.sbspro.2015.05.077