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Fostering Environmental Awareness through Waste Management Training and the Establishment of a Waste Bank in Bareng Lor Village

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ABSTRACT

Household waste management in Bareng Lor Village remains challenging due to low waste sorting rates and suboptimal waste utilization. This community service program aims to improve environmental awareness through waste management education and the establishment of a Waste Bank. It employed a Participatory Action Research (PAR) approach, involving residents in problem identification, planning, implementation, and evaluation. Activities included outreach for Neighborhood Unit (RT) heads, the Family Welfare and Empowerment Movement (PKK), and residents; liquid compost training; construction of a Waste Bank facility in Community Association (RW) 04; and facility handover to the community. Results showed that 35 of 55 RT heads attended outreach sessions, while 4 of 5 RTs (80%) in RW 04 actively participated in establishing the facility. Participants also demonstrated enthusiasm and improved understanding of waste sorting and processing. However, the management committee had not been established by the program's end. Continued guidance and institutional strengthening are therefore needed to ensure sustainability.

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Introduction

The waste problem is one of the environmental issues that remains a serious challenge for many regions in Indonesia (Listiyani & Wijaya, 2026), including Bareng Lor Village in Klaten Regency. The continuously rising population, coupled with consumption patterns that are not yet fully environmentally conscious, has a direct impact on the increasing volume of waste generated each day. Without a proper waste management system, this situation has the potential to cause various problems ranging from health concerns to environmental aesthetics and ecosystem sustainability.

This problem is clearly evident in the Bareng Lor neighborhood, where the existing waste disposal site (TPS) has become overloaded exceeding its capacity and has consequently been forced to close temporarily. This overload is caused not only by the volume of waste from Bareng Lor residents themselves but also by residents from outside the neighborhood who have been disposing of their waste at the site, causing the TPS's workload to far exceed its intended capacity. This issue garnered widespread public attention and went viral on social media, even prompting the Deputy Regent of Klaten to visit the site personally to assess the condition of the TPS and ensure proper management.

This waste management crisis demonstrates that the issue of waste is not solely the responsibility of the local government but requires the active involvement of all segments of society, from the neighborhood unit (RT) level up to the community unit (RW) level. Public awareness regarding the importance of sorting organic and inorganic waste, as well as an understanding of sustainable waste management, still needs to be improved so that similar problems do not continue to recur in the future.

In response to these issues, students participating in the Community Service Program (KKN) stepped in to contribute to efforts to strengthen environmental awareness among the residents of Bareng Lor Village through a waste management education program and the establishment of a waste bank. The program's activities included raising awareness about the waste bank among all neighborhood unit (RT) leaders in Bareng Lor, educating residents on the types of organic and inorganic waste, hands-on waste sorting exercises, a demonstration of processing organic waste into leachate compost, and the establishment of a waste bank in RW 04 as the main initiative. Through this series of activities, it is hoped

that a collective awareness will grow among the community regarding independent and sustainable waste management, while also providing a long-term solution to the problem of waste transfer station (TPS) overload that has been occurring.

Methods

This community service activity employed a Participatory Action Research (PAR) approach, which positions the community as active partners in every stage of the activity from problem identification to reflection ensuring that the program implemented aligns with community needs and is oriented toward sustainability (Siswadi & Syaifuddin, 2024). The community service activity was carried out in Bareng Lor Village, targeting the Village Head and village officials, the Head of RW 04, all RT Heads in RW 04, all RT Heads throughout Bareng Lor Village, members of the PKK (Family Welfare Movement), and the residents of RW 04.

The problem identification phase (research) was conducted through unstructured interviews and field observations. Interviews were conducted with the Village Head, the RW 04 Chairperson, and all RT Chairpersons in RW 04 through home visits to explore the state of waste management, issues related to waste collection point (TPS) overload, and the history of previous Waste Bank programs. Observations were made regarding the existing conditions of the TPS and residents' waste management practices (Nurmasari et al., 2024).

The results of the assessment served as the basis for program planning: outreach on the Waste Bank, education on organic and inorganic waste management, training on leachate composting, and the inauguration of the RW 04 Waste Bank. The action phase included outreach to all RT heads in the Bareng Lor urban village and PKK members, education and hands-on training in waste sorting, a demonstration of leachate composting, and the inauguration of the RW 04 Waste Bank.

The observation phase showed that 4 out of 5 RT (80%) in RW 04 were actively involved in the process of establishing the Waste Bank, with 35 out of 55 RT heads attending the outreach sessions. The reflection phase was carried out by the service team through internal discussions, which identified that while the inauguration of the RW 04 Waste Bank had taken place, the management

committee had not yet been formed by the end of the service program; this served as the basis for recommendations regarding sustainability to the RW leadership.

Results and Discussion

An initial outreach session was held on Friday, July 3, 2026. Community Service Program (KKN) Groups 26101 and 26102 conducted a waste management outreach session at the Bareng Lor Village Office, attended by neighborhood unit (RT) leaders and featuring a guest speaker from the Klaten Regency Environmental Agency (DLH). The material presented covered methods for managing organic waste at the household level, such as composters, LOSIDA systems, biopore pits, and conventional trash pits. Mr. Agus, the speaker, emphasized that the DLH only collects residual waste, so the processing of organic waste must be done independently.



Figure 1. Waste Management Awareness Campaign

In addition, the speaker explained the importance of waste banks as a means of reducing inorganic waste while increasing economic value through the sorting and sale of waste, particularly plastic. Residents were also encouraged to apply the "Reduce" principle by minimizing the use of single-use items and buying only what is necessary to reduce waste generation.

It was also explained that organic waste can be turned into compost for agriculture, and the community was encouraged to get into the habit of sorting waste and reducing food scraps starting at home. Through these habits, it is hoped that the volume of waste disposed of at the transfer station will decrease and the environment will become cleaner and more sustainable.

In addition to conducting outreach on the waste bank program for the heads of neighborhood units (RT) throughout Bareng Lor Village, the Community Service Program (KKN) team also had the opportunity to present information about the waste bank during a PKK (Family Welfare Movement) event in Bareng Lor Village. The event was attended by women's group leaders (RW) from across Bareng Lor Village, while the KKN team served as resource persons to explain the implementation mechanisms of the waste bank program, which will be piloted in RW 04 as a model for other RWs. The author explained the waste bank management process, starting from sorting, collection, and weighing, all the way to selling the waste to collectors. During the presentation, the participants showed great enthusiasm by listening intently to the explanation and actively asking questions and offering feedback regarding the implementation of the waste bank program.

On Friday, July 10, 2026, the KKN Group 26102 had the opportunity to lead an activity organized by the PKK of RW 3 in the Bareng Lor neighborhood. During the event, the team conducted an awareness campaign on the management of organic and inorganic waste, covering everything from waste sorting to methods for turning organic waste into compost and repurposing inorganic waste into products with economic value. This outreach aimed to educate the community on the importance of reducing waste generation at the household level. The activity was prompted by the problem of waste accumulation at the Bareng Lor Village Waste Disposal Site (TPS), which led to the temporary closure of the site. Through this outreach, it is hoped that the community particularly residents of RW 3 will gain a better understanding of the importance of proper waste management and develop an awareness of the need to reduce and utilize both organic and inorganic waste in their households. Throughout the event, residents of RW 3 showed great enthusiasm for the material presented, especially during the Q&A session on simple composting techniques using used water jugs and the production of eco-enzymes from fruit peels.

On Friday, July 10, 2026, the KKN Group 26102 also had the opportunity to participate in a PKK event in RW 11 of Barenglor Village by conducting an outreach session on the management of organic and inorganic waste. During the event, the team emphasized the importance of sorting waste at the household level, processing organic waste into compost, animal feed, and eco-enzymes, as

well as utilizing inorganic waste through the principles of Reduce, Reuse, Recycle (3R). This outreach was conducted as an effort to raise public awareness about reducing waste generation a major issue in Barenglor Village, particularly due to the accumulation of waste at the Waste Collection Site (TPS). Residents of RW 11 welcomed the event warmly and showed enthusiasm throughout the session, especially in learning simple methods to process organic waste and repurpose inorganic waste to create both practical and economic value. Through this activity, it is hoped that residents of RW 11 will be able to independently implement waste management in their daily lives and contribute to creating a cleaner and more sustainable environment in Barenglor Village.

On Wednesday, July 15, 2026, the KKN Group 26102 once again had the opportunity to lead a PKK activity in RW 12 of Barenglor Village with the same topic: an awareness campaign on organic and inorganic waste management. The team explained the steps for sorting waste, processing organic waste into compost, animal feed, and eco-enzymes, as well as the reuse of inorganic waste which can be sold or repurposed into more useful items. Additionally, the team introduced the 3R principle (Reduce, Reuse, Recycle) as a simple guideline that residents can apply in their daily lives. Residents of RW 12 warmly welcomed this activity and showed great interest, particularly in the economic potential of inorganic waste, which has long been underutilized. These outreach sessions in RW 3 and RW 12 are part of the ongoing efforts by KKN Group 26102 to raise awareness throughout the Bareng Lor neighborhood regarding the importance of waste management at the household level.

Interest in economic value indicates that economic incentives can serve as a gateway to increasing community participation in waste management. Thus, the "waste bank" approach not only provides environmental benefits but also fosters behavioral change through economic incentives.

On Tuesday, July 14, 2026, Community Service Program (KKN) Group 26102 had the opportunity to lead an activity organized by the PKK of RW 10 in Bareng Lor Village. During the event, the team conducted an outreach session on the management of organic and inorganic waste, covering everything from waste sorting to methods for turning organic waste into compost and repurposing inorganic waste into products with economic value. This outreach aimed to educate the community on the importance of reducing waste generation at the

household level (Krisnawati et al., 2022). This activity was prompted by the problem of waste accumulation at the Bareng Lor Village Waste Disposal Site (TPS), which led to the temporary closure of the site. Through this outreach, it is hoped that the community particularly residents of RW 10 will gain a better understanding of the importance of proper waste management and develop the awareness to reduce and utilize both organic and inorganic waste within their households. Throughout the event, residents of RW 10 showed great enthusiasm for the material presented. This enthusiasm prompted the RW 10 Chairperson to request that the KKN Group 26102 organize a follow-up activity involving hands-on practice in processing organic waste into compost, as well as repurposing inorganic waste into more useful products with market value.

On Friday, July 24, 2026, the KKN 26102 group had the opportunity to conduct a training session on making liquid compost (leachate fertilizer). The session was attended by women from RW 10 in the Bareng Lor neighborhood. The event began with opening remarks from Ms. Retno, the head of RW 10. In her remarks, she emphasized that this training session was highly beneficial, as it would enable the women to practice making compost from household waste. The goal of the activity was not only for the women to understand the urgency of waste management but also to empower them to independently process organic waste into compost at home.

The compost was made using the stacked-bucket method, as the tools and materials required were readily available. The composting process uses the following tools and materials: two plastic jugs, vegetable scraps, dry leaves, soil, and EM4. Composting begins by stacking the two jugs; the first jug (bottom) is used to collect leachate, while the second jug (top) is used to hold the organic waste. The order of adding the materials starts with crushed dry leaves; these leaves act as a sponge to absorb excess water (Haug, 1993; Rynk, 1992). The second layer is soil, which serves as a source of natural microorganisms. The third layer consists of household waste that does not contain oil or meat such as vegetable scraps and fruit peels (Bernal et al., 2009). The next layer is soil, and the process is completed by covering it with a layer of crushed dry leaves. Next, add EM4 solution; this solution contains microorganisms that are beneficial to plants. EM4 can also accelerate the composting process and improve the quality of the compost

we produce. Household waste can be added again but must be covered with a layer of dried leaves (Nurwati et al., 2023).

After the hands-on session on making compost using household organic waste concluded, a discussion session was held so the women could ask further questions about the composting process. During the discussion, it was explained that the composting process takes 2 weeks to 1 month before the compost is ready for use as fertilizer. This training activity successfully increased the active participation of the women. Their enthusiasm was evident as they discussed the ease of using tools and materials already available at home, as well as the benefits of making liquid compost which offers economic value by enabling self-sufficiency in providing organic fertilizer for household plants.



Figure 2. Sosialisasi pembuatan pupuk kompos

The community's enthusiasm indicates that residents are actually aware of waste management issues; however, they have long been hindered by a lack of information regarding waste processing techniques that are easy to implement at the household level. This was evident from the participants' high interest in simple composting practices and the production of eco-enzymes. These findings suggest that practice-based education is more effective in fostering environmental awareness than the delivery of purely theoretical material.

As a tangible implementation of the program, a Waste Bank facility was constructed. The construction of this facility resulted from a joint agreement between the community service team, the village government, and the community, taking into account on-site needs, ease of construction, cost efficiency, and sustainability of use. The building measures 2 × 1 meters and is constructed

using a light-gauge steel frame, scrap wire mesh walls, a lightweight metal tile roof, and a galvanized steel plate door. These materials were chosen because they are lightweight, strong, easy to assemble, and capable of accelerating the construction process.

The construction process included site surveying, frame assembly, and the installation of walls, roofs, and doors using tools such as measuring tapes, drills, angle grinders, and other supporting equipment. The entire project was completed in approximately two weeks with the involvement of the community service team and the participation of the local community, with the hope that this would foster a sense of ownership toward the newly built facility.



Figure 3. Handover of the waste bank

After construction was completed, the Waste Bank facility was symbolically handed over to the Head of RW 04 one day before the end of the Community Service Program (KKN). This handover ceremony marked the transition of full management responsibility to the community; however, its long-term success depends heavily on the readiness of the management structure. Based on the KKN team's assessment, continued guidance from the urban village administration and RW 04 is still required.

Conclusion

The community service program which involved establishing a Waste Bank in the Bareng Lor neighborhood using a Participatory Action Research (PAR) approach successfully increased community understanding of the importance of waste management based on sorting and reuse. Outreach activities targeting Neighborhood Unit (RT) leaders, the PKK (Family Welfare Movement), and

community members in several Neighborhood Sub-units (RW), along with training on liquid compost production, provided practical knowledge on the management of both organic and inorganic waste that can be applied at the household level. Additionally, the construction and handover of the Waste Bank facility in RW 04 served as a tangible demonstration of support for more structured waste management and established it as a model area for other RWs in Bareng Lor Village.

The results of the activities also indicate that community participation levels remain uneven. The attendance of RT heads at sub-district-level outreach sessions remains relatively low, meaning that information dissemination and community engagement across the entire area have not yet been optimal. On the other hand, the high level of enthusiasm among residents in several RW particularly during training on organic waste processing demonstrates that a participatory approach can foster community engagement when activities are tailored to local needs and conditions. Therefore, the sustainability of the Waste Bank program requires a shared commitment among the sub-district government, Waste Bank administrators, and the community through mentoring, institutional strengthening, and the ongoing implementation of activities so that the program's benefits can continue to be felt after the KKN activities conclude.

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