


Community Empowerment Through Waste Bank Management to Achieve Sustainable Urban Development: A Case Study in Cilandak District, South Jakarta, Indonesia

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ARTICLE INFO	ABSTRACT
<p>Article History: Received: 2025-06-03 Accepted: 2025-08-06 Published: 2025-09-30</p> <p>Keywords: Empowerment; Management; Waste Bank</p> <p>Corresponding author: Masruroh Email: masruroh1811@ung.ac.id DOI: 10.37905/jgej.v6i2.30871</p> <p>Copyright © 2025 The Authors</p>  <p>This open access article is distributed under a Creative Commons Attribution-NonCommercial (CC-BY-NC) 4.0 International License</p>	<p>Urban waste challenges persist in intensifying and numerous communities exhibit a lack of engagement regarding sustainable waste management practices, waste banks present an alternative, proactive approach that empowers individuals through collaborative waste governance. The purpose of this study is to find out: How are Community Empowerment Efforts in managing Waste Banks in the area. This study uses a qualitative approach with the research location at the Waste Bank in Cilandak District. The management of waste banks in Cilandak sub-district is carried out by sub-districts in Cilandak sub-district, waste management is in accordance with Governor Regulation No. 77 of 2020 that each sub-district forms a waste bank up to the sub village level. Waste management in the Cilandak sub-district area has implemented the 3R concept, namely: a) Reduce (reduce waste generation), Reuse (reuse), and Recycle (recycle). The implementation of community empowerment through waste banks in Cilandak sub-district which is lowered into the activity program in each sub-district, namely having activities including waste bank socialization, waste saving, waste selection, skills training and evaluation carried out in the work program every year, but there are still shortcomings because not all RT/RW from each sub-district have formed a waste bank. This research is confined to one district and may not adequately represent wider regional disparities. Subsequent investigations ought to incorporate a comparative analysis across various urban locales to evaluate distinct frameworks of waste bank management and their enduring socio-economic and environmental repercussions.</p>

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1. Introduction

Solid waste management affects everyone in the world, both individuals who manage their own waste, and governments that provide waste management services to their citizens. Along with urbanization, economic development, and population growth in various countries and cities, the World Bank estimates that waste production will increase from 2.01 billion tons in 2016 to 3.40 billion tons by 2050 (The World Bank, 2018). This is supported by data obtained from the Ministry of Environment and Forestry (KLHK), and the generation of plastic waste continues to increase from 11 percent in 2010 to 17 percent in 2021 (Kementrian Lingkungan Hidup dan Kehutanan, 2022).

Daily life is inseparable from economic and noneconomic activities. Economic activities such as production, consumption, and distribution have positive and negative impacts. Waste is a material resulting from the existence of process/activity. The existence of garbage can be worrying if not handled properly (Shentika, 2016). The existence of waste can cause environmental problems, with environmental damage due to high economic and development activities in the agriculture, industry, energy consumption, and waste disposal sectors, as seen daily by plastic packaging waste, cans, paper scattered or piled up on the streets, alleys, drainage channels, rivers, and even in the sea. These piles of garbage often create a place for rats, other insects, and bacteria that can endanger human health when they are around residential areas (Bachtiar et al., 2015).

Solid waste management is the biggest challenge for authorities in both small and large cities in developing countries. This is mainly due to the increasing generation of solid waste and the burden on the municipal budget. In addition to high costs, solid waste management is associated with a lack of understanding of the different factors that affect the entire handling system (Abdel-Shafy & Mansour, 2018). One of the challenges faced by many countries in the global waste problem, especially in low-income countries, is financing waste management systems. In low- and middle-income nations, local governments frequently lack the financial resources and technical expertise required to invest in the SWM infrastructure. Local governments sometimes lack the funding necessary to provide services over the long run due to high net operating expenses, and they also struggle to secure commercial financing since their projects are not "bankable" (Lerpiniere et al., 2025).

Continuous development accompanied by an increase in population and the rate of economic growth in an area can have both positive and negative impacts. One is a change in people's consumption patterns, which ultimately causes new problems, including the emergence of waste (Purwanti et al., 2015). Because this waste problem is a concern of one of the largest contributors to waste, namely the large population of Jakarta residents, Jakarta has become one of the largest waste-producing cities in Indonesia. Waste that tends to increase from year to year requires us to participate in waste management so as not to burden the environment. Waste that tends to increase from year to year requires us to participate in waste management so as not to burden the environment. Waste banks offer solutions to the complex problems of waste dynamics by encouraging community-based waste management and creating economic value from recyclable waste. The importance of waste banks lies in reducing waste volume, increasing public awareness, and empowering the local economy (Fitria, 2024). The first is a waste bank. Until now, housewives in the Pauh District still view waste as a resource that has no benefits (Rahmi & Ernawati, 2021). Among the various approaches, the introduction of waste banks has emerged as a community-based solution that not only mitigates the environmental impacts of waste but also engages local communities in the management process (Kementerian Pekerjaan Umum, 2013). The concept of this waste bank is not very different from the 3R (reuse, reuse, recycle) concept. The 3R concept emphasizes how to reduce the amount of waste generated by reuse or recycling (Hikmah Perkasa & Apriani, 2021).

Kastanaki, 2025 adopted the 3R concept to estimate, manage, and maximize the economic value of PV waste in the European Union while supporting the transition to a circular economy and material independence in the renewable energy industry. Meanwhile, (Berck et al., 2024) the 3R approach, mainly emphasizes the recycling aspect through economic incentives (deposit-refund) while evaluating its effectiveness and social impact on consumer behavior and household welfare in the management of beverage container waste. In this study, the 3R principle was specifically implemented within waste bank programs across the Cilandak District. The application of "reduce" is realized by promoting behavioral change through awareness campaigns and incentivizing waste-minimization practices. "Reuse" is operationalized by encouraging residents to repurpose items such as containers, glass bottles, and used clothing. Finally, recycling is implemented structurally through sorting systems at waste banks, where inorganic waste is categorized and processed into reusable materials or sold to recycling vendors. The integration of 3R into this study is not only normative but also procedural, embedded in both the planning and daily activities of community waste bank management.

A waste bank operates on the principle of 3R (Reduce, Reuse, Recycle), which is now widely regarded as a more sustainable approach to managing waste compared to traditional disposal methods. A waste bank is a facility that allows people to collect inorganic waste that still has selling value and exchanges it for economic incentives. With the existence of a waste bank, the community is not only encouraged to reduce the amount of waste they produce but also to obtain economic benefits from good waste management (Kristian et al., 2025). Another potential can increase regional development efforts by empowering the community to manage waste through the 3R principle and the many benefits obtained by community-based waste management, namely, ecological, economic, and spiritual benefits (Jastam, 2015). A waste bank is a collective dry waste management system that encourages a community to play an active role. This system accommodates, sorts, and distributes waste of economic value to the market so that people can obtain economic benefits from saving waste (Juwita, 2019). As they can thus be effective tools for waste reduction and community empowerment, they require continuous efforts and coordination among various stakeholders, including local authorities, businesses, and community members. The concept of community empowerment proposes a development planning process that focuses on participation, capacity, and community. In this context, the community must be involved in every stage of development, starting from planning, implementation, and program evaluation (Sofyan & Soelfema, 2024).

The author finds that this topic has developed in the aspect of handling and managing waste correctly is very important to do, so that it becomes a place to learn about waste management by starting to build awareness of waste handling and management by forming a waste bank based on environmental education (Sari et al., 2022). To raise awareness, change viewpoints, and encourage sustainable practices among college students, it is imperative that educational workshops and classes on food waste be implemented. Universities require experiential, participatory programs adapted to the unique requirements and conduct of students to successfully reduce food waste (Bittner et al., 2025). This supports the notion that handling and managing waste properly is not only a practical challenge, but also an educational opportunity for learning sustainable behaviors.

Recent studies have demonstrated that waste management is becoming a major issue for sustainable development, rather than a logistical one (Bhandari et al., 2025). In Nepal, this study shows how metropolitan areas can use plastic recycling, composting, and trash segregation to turn garbage into valuable resources. However, the program still has weaknesses in several aspects that need to be improved, such as human

resources, facilities and infrastructure, time management, economic incentives, and waste bank programs. This study provides recommendations on how to maintain and improve waste bank activities to enhance household welfare and environmental quality. (Wilson et al., 2006a) emphasized that to guarantee sustainability, effective community-based trash management initiatives need ongoing government assistance, sufficient training, and financial incentives. Research on (Marlina, 2024) community-based waste management can start with a commitment to protecting the environment, starting from individual awareness, not litter, and understanding the importance of waste sorting. In a study conducted by (Sumarmi et al., 2025) Discussing Implementation strategies for green products and green packaging for tourism MSMEs to support the SDGs with research results, the application of green products and packaging is considered appropriate for tourism MSMEs in East Java because it utilizes environmentally friendly local materials, opens up new business opportunities, and supports the achievement of the SDGs by increasing environmental awareness, export potential, and the need for an active role of the government in socialization, education, and fostering MSMEs. In alignment with the Sustainable Development Goal (SDG) 12: Responsible Consumption and Production, the implementation of green products and packaging by tourism MSMEs promotes sustainable practices by minimizing environmental footprints and reducing reliance on single-use plastics. The use of local, biodegradable materials (e.g., bamboo, banana leaves, and recycled paper) reflects efforts to shift towards a circular economy, supporting SDG target 12.5, which aims to substantially reduce waste generation through prevention, reduction, recycling, and reuse. Furthermore, these practices open opportunities for inclusive and sustainable economic growth, as emphasized in SDG 8, particularly through job creation in eco-friendly sectors and improved market access for environmentally conscious MSMEs. As such, this study not only provides practical strategies but also a clear pathway for contributing toward global sustainability targets.

This study aims to examine how to manage waste banks in an effort to empower the community in Cilandak district, South Jakarta and How are Community Empowerment Efforts are in managing Waste Banks in the area.

2. Method

2.1. Research Design

The research method used in this study is qualitative. The sources of data in this research consisted of primary data obtained directly from informants, including waste bank customers, waste bank managers, and local environmental agency officials. Purposive sampling is used to collect informant data, with the direct involvement of waste bank consumers, waste bank managers, environmental agencies, and their knowledge about waste bank management to understand the effectiveness of waste banks as a community empowerment strategy, as recommended by (Creswell, 2009) the perspectives of various stakeholders in qualitative research. Secondary data documentation, official reports, and relevant regulatory guidelines. The data acquired in the research on the management practices of waste banks and the efforts of community empowerment in the Cilandak subdistrict. This encompasses information regarding the organizational framework, execution of programs, categories of waste administered (both organic and inorganic), degrees of community engagement, and facilitating or obstructive elements present within each subdistrict. The research employed semi-structured interviews and common interview guidelines, but there was flexibility to dig deeper into the topics that emerged during the conversation (Patton, 2002).

2.2. Data Collection

The data collection is carried out through a triangulation technique that combines observation, interviews, and documentation. Direct observation of the implementation of waste bank activities, including sorting, storage, and weighing of waste, to observe the behavior patterns of the community. Interviews with waste bank customers to see how the waste bank benefits and behavior change, interviews with waste bank managers to determine the waste bank management, and interviews with local officials such as the head of the sub-village, and the head of ekbang (head of the economic and development section), if necessary, to check institutional support and policy alignment. The documentation of this study is a picture taken by the researcher to strengthen the results. In this study, the documents collected were in the form of photos of activities in the field and waste bank passbooks. [Figure 1](#) Triangulation model used in this study.

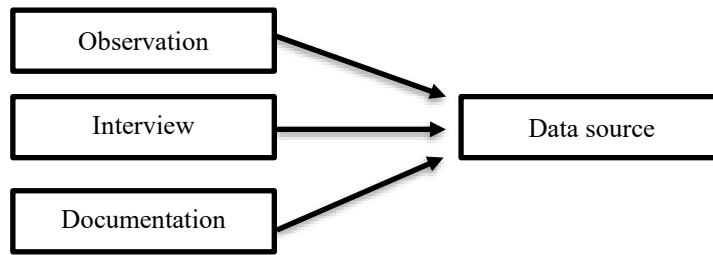


Figure 1. Triangulation Model
Source:(Sugiyono, 2014)

Some of the documentation that researchers obtained when observing and conducting research in several waste banks. In [Figure 2](#), documentation is taken while making observations.

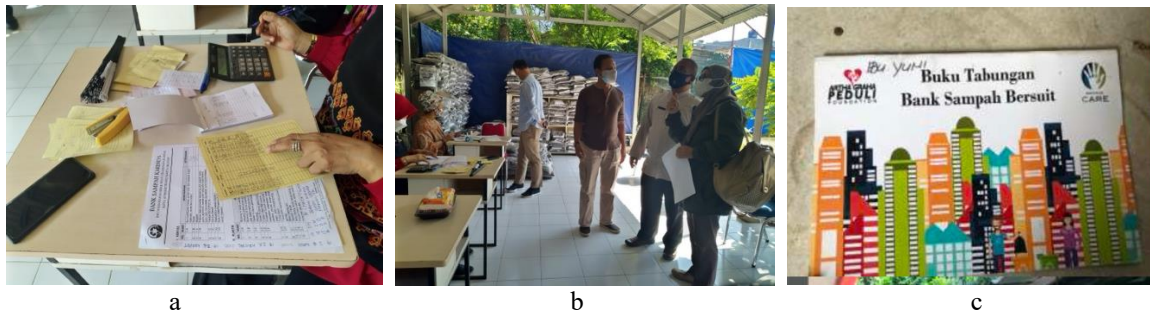


Figure 2. Documentation and observation

Some of the observations and documentation carried out by the researcher in [figure 2a](#) explain the recording of waste weighed by waste bank customers, while in [Figure 2b](#) shows observations and interviews with waste bank managers and in [Figure 2c](#) shows the savings books of waste bank customers from those in Cilandak district. Semi-structured interviews were conducted with waste bank customers, waste bank managers, and local officials, such as the heads of RT/RW and ekbang ([Table 1](#)). These interviews allowed for a deeper exploration of their experiences, perspectives, and knowledge of waste banks and empowerment. The interview questions used in this study were developed based on aspects of waste banks and empowerment strategies. The questions used in the interviews were as follows.

- How is the community's response to the waste bank?
- How was socialization to the community conducted?
- What challenges have been encountered?
- What are the products from recycling and how are they used or marketed?
- How is community participation built?

These open-ended questions give customers and waste bank managers freedom from their perspectives, thus providing good and detailed data. The collected data were analyzed using data reduction, display, and verification measures. Activities in qualitative data analysis are carried out interactively and take place continuously until they are complete, so that the data is saturated. The research instruments were the researcher himself, the interview guidelines, and field notes. The researcher seeks to further explore the management of waste banks in Cilandak district by reducing data, the process of reducing data by copying interview recordings, and a collection of field notes made into a digital document by copying it into words for each finding. After everything has been recapped in the form of a digital document, a selection is made to reduce irrelevant data. Irrelevant or repetitive information was omitted, and meaningful quotes were selected based on their relevance to the research questions. The next, displaying data and inferring after that, the results of the research are written in a descriptive narrative format, underpinned by tables, noted direct interviews and field documentation. The following respondents were taken in this study to be interviewed about community empowerment and waste banks.

Table 1. Participants Profile

No	Name	Role	Affiliation	Years of involvement
1	R1	Local officials	The waste bank karinda	3 years
2	R2	The head of ekbang	West Cilandak Village	4 years
2	R3	Waste bank managers	The waste bank maritim	4 years
3	R4	Waste bank managers	The waste bank bersuit	3 years
4	R5	Waste bank managers	The waste bank sehati	1,5 years
5	R6	Waste bank customers	The waste banks of taman RTH	3 years
6	R7	The Cilandak sub-district secretary	The Cilandak sub-district	5 years

Source: reseacher data, 2021

2.3. Research Time and Location

This research was conducted from August to October 2021 in the Cilandak District, South Jakarta. The Cilandak District has five sub-districts: Lebak Bulus, West Cilandak, South Gandaria, South Cipete, and Pondok Labu (Figure 3). This village was chosen based on its active participation in a community-based waste-bank program.

Although the data were collected in 2021, the findings are still relevant to the current context because they are sustainable with the institution of the waste bank program in Jakarta. The waste banks in Cilandak are part of long-term sustainability efforts in line with Governor's Regulation No. 77 of 2020 (Pergub No 77, 2020), which remains in effect and continues to guide the city's waste policy in Jakarta. In addition, this study discusses community participation, waste separation, and community empowerment, which is urban environmental governance, so it is still relevant to similar research conducted in developing countries, such as Brazil, which shows structural conditions and challenges in the management of waste banks consistently in urban middle-income areas (Gutberlet & Uddin, 2017). Therefore, the data obtained from this study are relevant and contribute to the global discourse on sustainable and participatory waste management in rapidly growing areas. A map of the research locations is shown in figure 3.

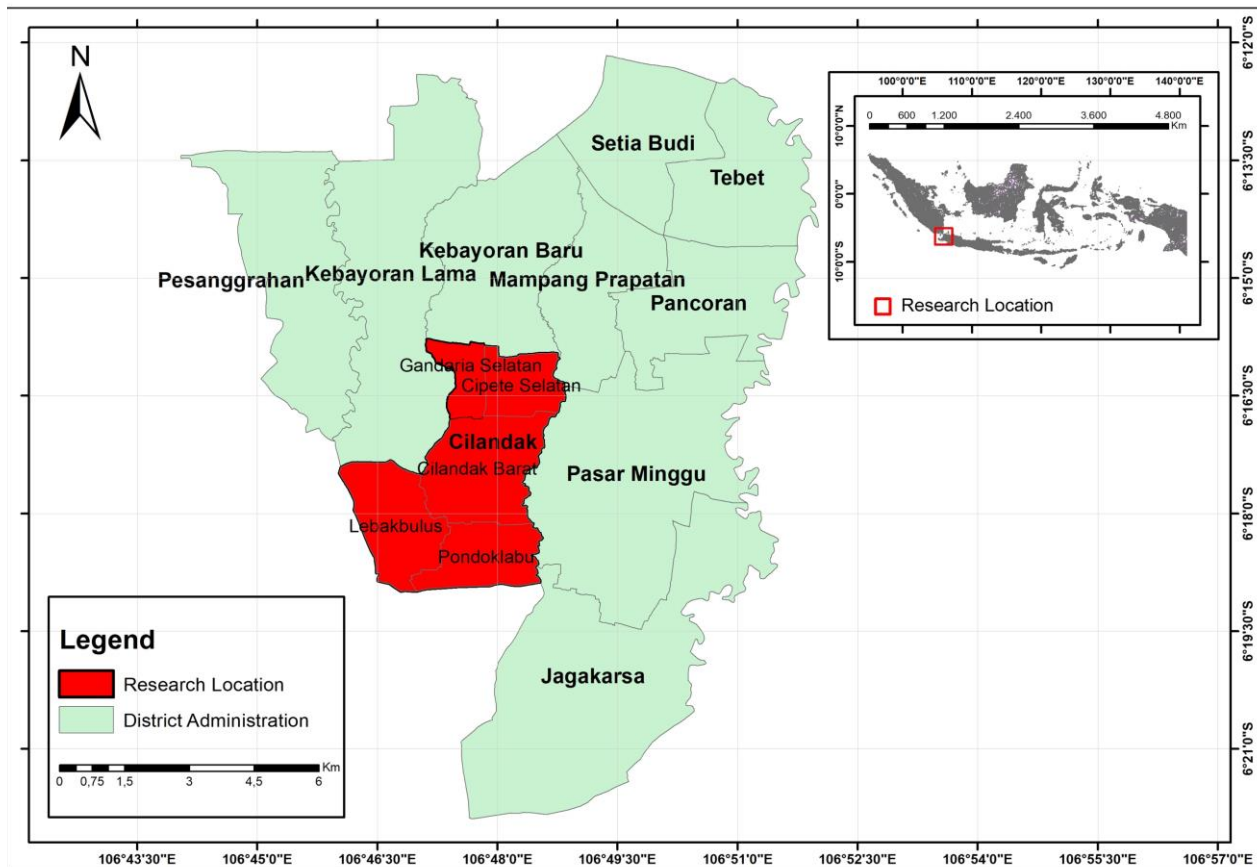


Figure 3. Research Location Map

3. Results and Discussion

3.1 Waste Bank Management in Cilandak District

Waste management in Cilandak District applies the 3R (Reduce, Reuse, Recycle) principle, as stipulated in Governor's Regulation No. 77 of 2020. Each village operates its own waste bank to manage organic and inorganic wastes. In the Lebak Bulus and West Cilandak sub-districts, the focus is on composting and eco-enzyme production for organic waste, whereas anorganic waste focuses on waste sorting and weighing.

Waste management in Lebak Bulus Village, one of which is on the Karinda Lebak Bulus waste bank. The results of the interview with R1, the chairman of the sub-village, at the beginning of the formation of the Karinda waste bank, was one of the activities to invite residents to care about the environment. "We collect fallen leaves and turn them into compost, which is sold at Rp 20,000 1 pack containing 6 KG." This is in line with the CBSWM framework (Zurbrügge et al., 2012), which emphasizes local participation and institutional support.

The results of the interview with the head of ekbang west Cilandak R2 The purpose of the waste bank is waste reduction and how much volume of waste is lifted so that the volume of waste transported and managed is known for sure. The Maritime Waste Bank focuses on eco-enzymes and composting, and the interview results with R3 the manager waste banks said "The goal is to reduce waste volume in West Cilandak." One of the waste banks in Cilandak Village is a Bersuit waste bank managed by the village itself, and PPSU was established in 2018 with a total of 150 customers, PPSU officers came to residents to pick up sorted waste, such as plastic bottles and cardboard. The interview with R4 the manager of a Bersuit waste bank was "to provide socialization to residents to sort waste so that the results of the sorting can be weighed and make money."

In the villages of South Cipete and Pondok Labu, the focus of waste management for organic waste is composting, maggot cultivation, and sorting and weighing of anorganic waste. The results of an interview with R5, the manager of the sehati waste bank South Cipete "from garbage can be money, why is it thrown away" Waste has economic value as well if it is sorted. The recycling process in the waste bank involves making pots and lantern decorations from used aqua glass or gallons. In addition, organic waste recycling involves the production of liquid fertilizer and compost from eggshells (POC). In Pondok Labu Village, one of the waste banks of Taman RTH managed by residents cultivates maggot for organic waste and vertical agriculture using compost. The results of the customer waste bank interview R6 said, "We process leftovers into fertilizer and cultivate vegetables around the Green Open Space." This is similar to what is done in Kenya, where urban agriculture is integrated with the reuse of community waste as compost (Wilson et al., 2006).

From the results of observations and direct interviews with waste bank managers in the Cilandak sub-district, most waste banks manage inorganic waste by sorting and weighing to reduce the volume of waste before disposal in the landfill. This is supported by research (Juwita, 2019) on inorganic waste management, where residents bring waste to the waste bank management team, the waste is weighed, and the waste bank management records the amount of waste collected from each customer in their respective ledgers and savings books. With the existence of the savings book, waste bank customers provide transparency and involvement of bank customers to take part in waste management in their area. It is similar to waste banks operating in Thailand with consistent institutional funding (Premakumara, 2013), while organic waste in the waste bank in Cilandak District and some waste banks in each village make composting and eco-enzymes. This is in line with the research conducted on (Benny et al., 2023) the use of kitchen waste, especially citrus fruit peel. Eco-enzyme products support sustainability and community empowerment. Eco-enzymes have great potential for development, especially in increasing their production capacity and marketing them widely. It is hoped that not only the ecological and social impacts can be utilized by the community, but also the economic impact (Tanjung et al., 2023).

3.2 Community empowerment efforts in waste bank management in Cilandak

In the process of empowering the community, a long series of processes is required. Empowerment tends to be related to social, economic, and political elements (Mustafirin et al., 2021). District Efforts to empower the community in the management of waste banks in Cilandak District are as follows:

The first Stage In preparation stage, in which there are at least several elements involved, such as village authorities, community leaders, and community groups. As a result of this process, the objectives, structure, and types of activities held by each waste bank are formed to form a waste bank. The second is the assessment stage, in which the assessment process involves deliberations with waste bank managers to identify the problems and needs needed to build solidarity, love for the environment, and awareness in sorting household waste.

The third stage is the alternative Planning Stage of Programs or Activities, at managers try to invite the community to participate in waste bank program and other environmental activities. An alternative program could encourage residents to participate in reducing waste in their home environments. This stage can be done by regular small-scale meetings with the next stage carried out by residents and waste bank managers. This is supported by research showing (Muntazah & Theresia, 2015) that community participation is very strong, especially because of the encouragement from community leaders and village employees who cooperate with each other in realizing the waste bank program in an effort to empower the environment and the community.

Fourth, action Plan Formalization Stage The plan formulation stage pours the ideas that have been formulated in the alternative planning stage of the program into a written statement of activity. In the formulation of the action plan, community leaders or mobilizers who have been selected play a role in bridging villages by presenting community participation in their respective villages, in this case villages in the Cilandak subdistrict. This is supported by research conducted (Wulandari et al., 2024) by the community involved in the Waste Bank, which is responsible for maintaining the cleanliness of the environment. They are not only passive participants but also actively contribute to every activity that supports the 3R campaign.

Fifth, the implementation stage of "implementation" of the program or activity: At this stage, the Waste Bank that has been formed begins to implement the program on what has been planned properly. Several planned programs have been implemented, such as routine waste weighing once every two weeks or once a month, and an empowerment program, namely recycling organic waste by composting, composting, and composting. Waste management with a new paradigm views waste as a resource that has benefits, whereas its management relies on a source approach (upstream-downstream approach). The new paradigm of waste management covers the entire waste lifecycle from upstream (before it was produced) to downstream (in the phase where the product has been used and becomes waste), which is then sent to the landfill (Marta & Usrotin, 2022).

In the eighth evaluation Stage, the existence of evaluation at this stage is so that internal supervision is formed so that the planned program continues to run well. At this stage, residents can provide input so that waste bank programs or activities in their area develop and continue to exist in carrying out their programs. This is supported by research (Rahmawati & Fiorentina, 2021) with the establishment of this waste bank system, and it is hoped that it will make it easier to manage with the goal that the waste bank program can be empowered for the community in the region. In addition, it is necessary to socialize and monitor directly in stages so that the activities of the waste bank program run by the community can run well. This is in accordance with the basis for the establishment of a waste bank, namely, from the community, by the community, for the community. In The Last Termination Stage, the disconnection stage in this case with the formation of a waste bank with related parties is part of a program based on public awareness, local governments, and local governments in the spirit of making the environment better and long-term.

The implementation of community empowerment through waste banks in the Cilandak sub-district, which is derived into the activity program in each sub-district, includes activities such as waste bank socialization, waste savings, waste selection, skills training, and evaluation carried out in the work program every year, but there are still shortcomings because not all sub-villages from each sub-district have formed a waste bank. Factors that affect community empowerment through waste banks in Cilandak District are not optimal management performance, complaints about land and place, less specific division of labor, and lack of community participation. The impact of community empowerment through the waste bank in Cilandak District on the environmental aspect is quite good, which can be seen from the cleaner environment; on the economic aspect, it is enough to provide additional income for active members; on the social aspect, there is a growing awareness of caring for the environment and reminding each other between communities.

In the research (Rusdiyana et al., 2024) on the operational experience of waste banks independently, in an effort to increase experience and motivation, waste bank administrators were invited to conduct comparative



Figure 4a



Figure 4b



Figure 4c

Figure 4. Community activities in several villages

studies with other waste bank administrators to obtain a different perspective. The last step, monitoring and evaluation, aims to determine the impact of the program on change. Figure 4 shows several community activities that support community empowerment efforts in waste management in several villages in the Cilandak District.

In Figure 4a, several waste bank customers participate in training on ecoenzymes from fruit and vegetable waste materials. As shown in Figure 4b, one of the waste banks in east Cilandak village makes fish farming, and in Figure 4c, one of the empowers carried out in Cilandak district by cultivating magots. The results of an interview with the sub-district secretary indicated that coaching community groups in the waste sorting program continues to be carried out. The waste sorting program was carried out every day, and for weighing waste results, sorting was carried out once a month.

4. Conclusion

This study shows that the management of waste banks in Cilandak sub-district, South Jakarta, plays an important role in reducing the volume of waste and empowering the community through the application of the 3R (Reduce, Reuse, Recycle) concept. Community empowerment efforts in the management of waste banks in Cilandak District are carried out in several steps: the preparation stage, assessment, program preparation, action plan, implementation, evaluation, and termination. This program involves various activities, such as socialization, waste sorting, weighing, and skills training. From the results of the research, it was also found that most of the villages already have waste banks, but there are still challenges, such as lack of community participation, limited land, and uneven formation of waste banks in each sub-village. However, this initiative has had a positive impact on increasing environmental awareness, creating economic opportunities, and reducing environmental pollution. Therefore, stronger support from the government and community is needed to increase the effectiveness of this program and expand its reach.

In general, these results support international discussions on community-based solid waste management as a vital instrument for attaining climate resilience and urban sustainability, especially in the rapidly expanding cities of the Global South. The effectiveness of waste banks as socioeconomic and environmental interventions emphasizes their applicability to integrated urban governance frameworks and Sustainable Development Goals, particularly 11 (Sustainable Cities and Communities) and 12 (Responsible Consumption and Production).

The contribution of this study is its examination of waste bank systems functioning in an urban Indonesian context, both from a technical waste reduction standpoint and from the standpoint of community empowerment. It provides a useful framework for assessing comparable initiatives in crowded metropolitan settings where formal and informal governance frameworks need to cooperate. By offering actual data on the institutional, social, and behavioral aspects of waste bank management, this study adds to the existing literature.

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