

**The Roles and Challenges of a Community-Based Waste Bank: A Case of Bank Sampah Teratai in South Tangerang, Indonesia**



**Peran dan Tantangan Bank Sampah Berbasis Komunitas: Kasus Bank Sampah Teratai di Tangerang Selatan, Indonesia**

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**ARTICLE INFORMATION**

<p><b>Keywords</b>                  Waste Management;                  Community-Based                  Waste Banks;                  Sustainability;</p>	<p><b>ABSTRACT</b>                  Waste generation is an inevitable consequence of human activity and remains a pressing issue, particularly in urban areas. Rapid increases in waste volume, combined with inadequate infrastructure and ineffective disposal systems, have led to serious environmental and public health concerns. Community-based waste management strategies, such as waste banks, offer sustainable alternatives by integrating recycling programs, financial incentives, and citizen engagement. This study explores the roles and challenges of Bank Sampah Teratai (BS Teratai), a community-led waste bank in Pondok Pucung, South Tangerang, Indonesia. Using a qualitative approach, the research highlights BS Teratai's contributions in raising environmental awareness, promoting economic empowerment through waste-based savings, and strengthening social cohesion. Verbatim quotes from participants illustrate how the initiative transforms waste from a burden into a valuable community asset. However, persistent challenges remain, including inconsistent community participation, limited storage capacity, unstable recyclable market prices, and the absence of proper facilities for hazardous and electronic waste. The COVID-19 pandemic further disrupted community involvement, exposing the vulnerability of grassroots efforts. This study emphasizes that waste banks can function not only as waste reduction tools but also as platforms for empowerment and behavioral change. The BS Teratai case offers valuable insights for replicating sustainable, community-based waste management models in other urban settings.</p>
<p><b>Kata Kunci</b>                  Pengelolaan Sampah;                  Bank Sampah Berbasis                  Komunitas;                  Keberlanjutan;</p>	<p><b>ABSTRAK</b>                  Timbulan sampah merupakan konsekuensi dari aktivitas manusia dan menjadi isu kritis, khususnya di wilayah perkotaan. Peningkatan jumlah sampah yang cepat, ditambah keterbatasan infrastruktur dan sistem pembuangan yang tidak efektif, menyebabkan tantangan lingkungan dan kesehatan masyarakat. Pengelolaan sampah berbasis komunitas seperti bank sampah menjadi alternatif berkelanjutan dengan menggabungkan program daur ulang, insentif ekonomi, dan partisipasi warga. Studi ini mengeksplorasi peran dan tantangan Bank Sampah Teratai (BS Teratai), sebuah inisiatif masyarakat di Pondok Pucung, Kota Tangerang Selatan. Dengan pendekatan kualitatif, penelitian ini mengungkap kontribusi BS Teratai dalam meningkatkan kesadaran lingkungan, memberdayakan masyarakat secara ekonomi melalui tabungan berbasis sampah, dan memperkuat kohesi sosial. Kutipan langsung dari informan menunjukkan bagaimana inisiatif ini mengubah sampah dari beban menjadi aset komunitas. Namun, tantangan tetap ada, seperti partisipasi yang tidak konsisten, keterbatasan fasilitas, fluktuasi harga daur ulang, dan kurangnya pengelolaan limbah B3 dan elektronik. Pandemi COVID-19 turut memperlemah partisipasi masyarakat. Studi ini menegaskan bahwa bank sampah memiliki potensi tidak hanya sebagai alat pengurangan sampah, tetapi juga sebagai sarana pemberdayaan dan perubahan perilaku. Kasus BS Teratai menawarkan</p>

		pelajaran penting bagi pengembangan model pengelolaan sampah berkelanjutan di wilayah perkotaan lainnya.
<b>Article History</b> Send 15 <sup>th</sup> May 2025 Review 24 <sup>th</sup> May 2025 Accepted 2 <sup>th</sup> June 2025		Copyright ©2026 <a href="#">Jurnal Aristo (Social, Politic, Humaniora)</a> This is an open access article under the <a href="#">CC-BY-NC-SA</a> license. Akses artikel terbuka dengan model <a href="#">CC-BY-NC-SA</a> sebagai lisensinya.



## Introduction

Indonesia's waste management system remains in a critical state, as evidenced by the overflowing Final Disposal Sites (TPA) across nearly all regions due to overcapacity. This waste crisis highlights significant inefficiencies in waste handling and infrastructure, which have failed to keep pace with rapid urbanization and rising consumption patterns (Raharjo, et al., 2017). Despite various government initiatives, including Law No. 18 of 2008 on Waste Management, a large portion of waste continues to be mismanaged, leading to environmental degradation and public health risks (Budyarto et al., 2024).

Urban management today faces a complex array of challenges, particularly in waste management. These challenges include the rapid increase in waste accumulation, limited public awareness of responsible waste disposal behavior, and difficulties in managing final waste disposal (N A A Abus et al, 2024). The consumer-driven lifestyle prevalent in metropolitan areas further exacerbates waste production, complicating disposal efforts and overburdening existing infrastructure. Effective waste management requires a coordinated effort from government authorities, businesses, and communities to promote sustainable practices and reduce landfill dependency. Public understanding of waste management and awareness of its potential benefits can influence individuals' willingness to engage in waste management initiatives (Ma & Hipel, 2016 ). Complementing this (Zhang et al., 2015) emphasize that individual behaviors toward waste separation are not only driven by knowledge but also by attitudes, perceived behavioral control, and the influence of social norms within their community.

Waste management is also a significant issue in Banten Province. According to data from the National Waste Management Information System (Sistem Informasi Pengelolaan Sampah Nasional) as of 2023, the total waste generation in Banten amounts to 2,037,973 tons. The three regions with the highest waste generation are Tangerang City (514,478 tons), Serang Regency (428,963 tons), and South Tangerang City (369,178 tons). These figures reflect the urgent need for localized waste reduction strategies to complement national policies. To address these challenges, community-based waste management solutions have gained attention as a viable alternative to traditional disposal methods (Sriyanto & Intan, 2019). Waste banks, in particular, offer an integrated approach by combining recycling incentives, financial benefits, and environmental awareness programs. The 4R principle (Reduce, Reuse, Recycle, and Replant) has been widely promoted in Indonesia as part of these initiatives, encouraging waste reduction at the source while fostering economic empowerment. In many Southeast Asian cities, waste management often relies on informal

or community-based systems that compensate for limited governmental infrastructure. These grassroots initiatives, play a critical role in waste reduction, livelihood creation, and community development (Holt & Littlewood, 2017).

In this context, Bank Sampah Teratai (BS Teratai), located in Pondok Pucung, Pondok Aren District, South Tangerang City, was established as a community-driven initiative to promote sustainable waste management. Operating similarly to a financial institution, BS Teratai enables community members to deposit and categorize dry waste in exchange for financial savings, effectively transforming waste into an economic asset. Beyond reducing landfill waste, this approach cultivates responsible environmental behavior and reinforces the perception of waste as a resource with both economic and social value. Such models in Southeast Asia have proven effective in empowering communities and reducing landfill dependency through structured, incentive-based systems (Choochote & Supakata, 2025).

BS Teratai was founded by a former employee of PT Unilever Tbk, a multinational consumer goods company whose packaging waste contributes significantly to urban waste generation. Drawing from their corporate sustainability experience, the founder sought to extend waste reduction efforts into their local community. The initiative's primary objectives are to enhance public awareness, promote proper waste segregation, and integrate recycling efforts into daily life. Over time, BS Teratai has evolved into a holistic waste management model, combining community participation, government support, and private-sector collaboration.

While several previous studies have examined waste banks primarily as environmental initiatives or informal financial mechanisms (Meidiana & Gamayanti, 2021); (Pradiko et al., 2021), few have explored their role as platforms for community empowerment and behavioral change in post-pandemic urban settings. Moreover, limited literature has focused on the specific operational and social dynamics within local waste banks, especially in the context of rapidly urbanizing areas such as South Tangerang. Here to seeks to address that gap by providing a contextualized, qualitative case study of BS Teratai, examining its functions not only in waste reduction, but also in economic empowerment, social cohesion, and grassroots sustainability practices. This study examines the role of BS Teratai in community-based waste management and the challenges faced in sustaining its operations. The findings aim to contribute to the broader understanding of waste banks as sustainable community-based solutions.

## Method

To comprehensively examine the role of Waste Banks as a sustainable solution, this study adopted a qualitative research approach. Qualitative research is particularly suited for exploring specific social situations, events, roles, groups, and interactions. Given that the study seeks to explore the roles and challenges of BS Teratai. According to (Neuman, 2014), descriptive research offers a detailed representation of particular situations, social contexts, or relationships. Data were collected through semi-structured interviews, informal conversations, direct observations, and document reviews. Six informants participated, consisting of one community leader, one BS Teratai officer, one partner of BS Teratai, one community member, and three waste bank's customers who were actively engaged in waste bank activities. In general, the criteria for informants in this study are individuals or parties who have strong relevance and connection with BS Teratai. The selection criteria for informants include:

- 1). Individuals who have an in-depth understanding of the operations of BS Teratai
- 2). Individuals who are directly involved as partners of BS Teratai
- 3). Individuals who are responsible for assisting the waste bank program at the location

The informants are tabulated as follows:

#	Initial	Function
1	AW	Community Leader, BS Teratai Lead
2	SF	BS Teratai Officer
3	H	BS Teratai Partner, PT Pegadaian
4	FA	Community Member
5	NI	BS Teratai's customer
6	R	BS Teratai's customer
7	K	BS Teratai's customer

Direct observation was conducted following the principles outlined by Flick (2022), capturing daily routines, social interactions, and environmental aspects which not always revealed through interviews. Primary data were validated through analysis of various documents, including a municipal report, news articles, photographs, and video clips related to BS Teratai. Thematic inductive analysis was employed to systematically identify patterns and emerging themes, ensuring a rigorous examination of the collected data (Neuman, 2014).

To ensure the validity of the data, this study employed triangulation of data sources, combining interviews, direct observations, and document analysis. By cross-verifying

findings from multiple sources, the study aimed to enhance the credibility, reliability, and depth of the results.

## **Result and Discussion**

The analysis of data revealed two primary aspects: the roles of BS Teratai in promoting sustainable community-based waste management, and the challenges encountered in sustaining its operations. The following section provides an in-depth discussion of these themes, supported by relevant data. To ensure the confidentiality and anonymity of research participants, pseudonyms have been used throughout the analysis.

### **The Role of BS Teratai**

Community-based waste bank is a part of community empowerment activity (Kubota et al., 2020). BS Teratai has played a crucial role in transforming waste management and fostering community empowerment in Kelurahan Pondok Pucung, Kecamatan Pondok Aren, South Tangerang City. In this study, BS Teratai is positioned as a community-based change agent, facilitating behavioral transformation and promoting sustainability at the grassroots level. This aligns with Rogers' (2003) concept of a change agent: an individual or institution that introduces and supports innovations within a social system to achieve positive change (Hartono et al., 2020). Household participation in waste separation programs is positively associated with perceived environmental benefits and community-led campaigns (Wang et al., 2020). As a local initiative, BS Teratai not only encourages environmental action but also promotes economic resilience and social integration. Additionally, this study draws on Zimmerman's (2000) theory of community empowerment, as described by Sarjiyanto (2022) which emphasizes enabling individuals and groups to gain control over their lives through participation, critical awareness, and collective action. Last but not least in this study, referenced to (Ife, 2013), a change agent acts as a social worker or enabler. As a change agent, Ife observes that there are four main roles that must be held by a social worker or community empowerment worker: the facilitative role, the educational role, the representational role, and the technical role.

Since its establishment in 2016, it has grown into a sustainable model for community-driven waste reduction, with participation increasing from 30 initial members to 260 active customers as of July 2024. The initiative not only promotes waste reduction but also educates, economically benefits, and strengthens social ties among residents. This aligns

with previous findings that providing financial or symbolic rewards enhances public participation in waste separation efforts (Ma et al., 2017).

Organizational learning plays a key role in promoting sustainable practices and building a culture of environmental responsibility (Sroufe, 2017). This aligns with one of BS Teratai's primary contributions: instilling a culture of waste consciousness and sustainability knowledge within the community, which significantly influences participation in the waste bank itself (Meidiana et al., 2021). A community leader who is BS Teratai Lead, explained that from the outset, BS Teratai has promoted waste management practices, including waste segregation and encouraging everyone in the community to incorporate recycling into their daily lives.

*"We gather the residents here and organize meetings to share information about proper waste management. We also give training on how to make use of both organic and non-organic waste."* (AW, 2025), a community leader, BS Teratai.

One of community member reported increased knowledge and practices of recycling, reduction of landfill waste, and the habit of saving through waste deposits. As one community member shared:

*"Before joining, I never thought much about where my trash ended up. It was just something to be thrown away. But now, I realize that waste has value. I separate plastics, cans, and even paper because I know they can be repurposed. It's a small effort, but collectively, it makes a big difference."* (FA, 2025), a community member.

BS Teratai had several NGOs partnering with them, to raise awareness and give technical training. Yayasan Unilever Indonesia and Yayasan Rumah Pelangi have been involved in workshops and community engagement programs, helping residents understand the importance of responsible waste disposal. Community engagement is a crucial component in achieving sustainable waste management, especially in developing countries where centralized systems often fail to reach local communities (Kumar et al., 2017). A BS Teratai officer shared:

*"Before these training sessions, many people didn't know how to properly separate their waste. But now, thanks to these NGO collaborations with us, people are willing to gather in a forum to be more informed and proactive."* (SF, 2025), BS Teratai officer.

Aside from raising environmental awareness, BS Teratai facilitated a tangible financial incentive that encouraged community participation. Residents were able to exchange sorted waste for savings, which, although modest, contributed to meeting household

needs such as purchasing school supplies or supporting small expenses. A community member highlighted this advantage:

*"At first, I joined just to reduce waste at home, but I was surprised when I received money from my deposits. It may not seem like much, but when you save it over time, it becomes quite helpful. I've used the savings to buy school supplies for my children."* (NI, 2025), BS Teratai's customer.

In 2019, PT Pegadaian launched an innovative waste-to-savings program, allowing residents to convert waste into gold savings or Umrah pilgrimage funds. This initiative has been particularly effective in attracting new participants and maintaining existing member. PT Pegadaian also provided financial support through its CSR program to help build and renovate BS Teratai office and its facilities. The community members shared their enthusiasm:

*"The idea that I can turn my trash into savings is incredible. It makes waste banking even more appealing and valuable for families like mine."* (FA, 2025), a community member.

*"We're happy to have a place where we can gather and hold training sessions. It helps us get more creative in turning waste into products with economic value."* (Ibu R, 2025), BS Teratai's customer.

Social wise, the monthly waste collection activities strengthened neighborly relations and community solidarity. Residents who previously had minimal interaction developed stronger social bonds through collaborative environmental activities. A community leader emphasized this impact:

*"I see neighbors who previously didn't talk to each other now working together to sort waste. Join our monthly waste weighing. It has brought people closer. Instead of waste being a problem, it has become a shared responsibility."* (AW, 2025) a community leader, BS Teratai.

### **Challenges in Implementing Waste Banks**

Despite its success, BS Teratai faces several challenges that must be addressed to ensure its long-term sustainability and continued growth. These challenges include community participation and awareness, infrastructure and storage limitations, fluctuating recyclable market prices, difficulties in handling e-waste, and the setbacks caused by the COVID-19 pandemic. Understanding these barriers is crucial to enhancing the effectiveness and scalability of waste bank initiatives. Here is BS Teratai's waste data, which indicates a significant decrease in total activities and waste volumes during 2020–2021 due to the COVID-19 pandemic, followed by a gradual increase thereafter.

**BS Teratai's waste data**

Year	2016	2017	2018	2019	2020	2021	2022	2023
Total of activities	1	16	11	11	7	4	10	11
Total of waste in kg	93	5,725	5,097	6,899	4,977	2,858	7,406	9,640
Value of waste in IDR	143,600	8,918,650	7,937,000	9,845,000	7,220,000	5,950,000	18,086,170	21,665,600

Source: BS Teratai's annual report

## Community Participation and Awareness

A key obstacle in implementing waste banks is encouraging sustained community participation and fostering awareness about proper waste segregation (Pradiko et al., 2021). While many residents actively engage with BS Teratai, some still view waste disposal as a government responsibility rather than a shared community effort. As one community leader noted:

*"Some people still don't see waste segregation as a priority. Changing this mindset takes time and continuous education."* (AW, 2025), BS Teratai Lead.

This lack of awareness is often due to insufficient environmental education and limited understanding of the economic benefits of recycling overall. Some residents fail to see the immediate impact of waste banking, leading to inconsistent participation in sorting and depositing recyclables. Overcoming this requires continuous outreach efforts, including educational campaigns, hands-on training, and school-based environmental programs. Furthermore, leveraging digital tools, such as mobile applications for waste tracking or incentive programs, could encourage greater engagement and long-term behavior change.

## Infrastructure and Storage Capacity

As BS Teratai continues to grow, its storage and processing capacity have become increasingly strained. The rising number of depositors and the growing volume of collected waste mean that existing facilities are reaching their limits faster than anticipated. The volume year by year are recorded in BS Teratai's annual report. A waste bank officer highlighted this concern:

*"We are reaching full storage capacity faster than before. If participation keeps increasing, despite it is one of our goals, we will need a larger facility and more manpowers."* (SF, 2025), BS Teratai officer.

Without adequate infrastructure, the waste bank may struggle to maintain efficiency, particularly in sorting and storing materials before they are sold or repurposed. Expanding

storage facilities requires financial investment and logistical planning, yet land availability and funding constraints pose significant barriers. Additionally, the lack of dedicated transport for waste collection further complicates operations, as waste must be moved manually or with limited vehicle access. Addressing these issues will require partnerships with local government bodies or private enterprises that can provide funding, land, or transport solutions to accommodate the growing scale of operations. In this context, strong environmental governance mechanisms play a significant role in supporting green innovation and enhancing the long-term sustainability of community-led initiatives like BS Teratai (Song & Ma, 2025).

### **Fluctuating Market Prices for Recyclables**

The economic sustainability of waste banks is heavily influenced by the market demand and pricing of recyclable materials. The price of recyclables, such as plastic, metal, and paper, is volatile, often fluctuating due to global supply chains, market saturation, and shifting environmental policies. A community member pointed out:

*"The price of recyclables isn't always stable. When prices drop, some people lose interest because they feel it's not worth the effort."* (K. Ibu, 2025), BS Teratai's customer.

*"One of the multilayer plastic (MLP) waste collection programs initially offered a relatively high price per kilogram. However, less than six months after it began, the price has dropped drastically by up to 90%."* (BS, 2025) a customer who's no longer active in BS Teratai.

*"A waste collection program was initially introduced to customers with high purchase prices to attract their interest. Once customer participation increased, the prices were gradually adjusted downward to align with market rates. This usually happens."* (SN, 2025) an activist of waste management nearby BS Teratai location.

When prices decrease, residents may become discouraged from participating, as the perceived financial return on waste deposits diminishes. This issue is particularly concerning for lower-income households that rely on waste collection as a supplementary source of income (Abdillah et al., 2024). To mitigate this challenge, diversifying revenue streams—such as integrating upcycling businesses, selling compost from organic waste, or collaborating with industries that require recycled materials—could help stabilize financial sustainability. Additionally, policy interventions, such as government-backed minimum price guarantees, reduction of neighborhood maintenance fee, or tax incentives for recycling businesses, could provide more stable economic incentives for waste banking initiatives.

## **E-Waste and Hazardous Materials**

One of the most complex waste management challenges is the proper handling of electronic waste (e-waste) and hazardous materials. Unlike plastic bottles or aluminum cans, e-waste contains toxic components such as lead, mercury, and lithium, which require specialized processing to prevent environmental contamination. A BS Teratai officer emphasized the difficulty of managing such waste:

*"Unlike plastic or paper, e-waste requires specialized disposal. We need support from the government and corporations to handle this properly."* (SF, 2025), BS Teratai officer.

*"There are waste classified as hazardous and toxic materials (B3), which requires handling with the assistance of other parties, such as local government and environmental agencies."* (H, 2025) BS Teratai's partner from PT Pegadaian.

Many community members lack knowledge on how to safely dispose of e-waste, leading to improper disposal practices, such as burning electronics or discarding batteries with regular household waste. This poses severe environmental and health risks, as heavy metals from e-waste can seep into the soil and water supply. Recycling facilities that process e-waste are also limited, making it difficult for waste banks to integrate proper disposal mechanisms into their operations. Collaboration with electronic manufacturers and government agencies is essential to establish take-back programs or drop-off points for safe e-waste collection. Moreover, incentivizing e-waste recycling through trade-in programs or buy-back schemes could encourage responsible disposal practices within the community.

## **Pandemic-Related Setbacks**

The COVID-19 pandemic caused major disruptions to waste bank activities, as social restrictions and economic uncertainty led to a temporary decline in community engagement, as stated:

*"During the pandemic, many people stopped participating. It took a while to rebuild momentum."* (NI, 2025), BS Teratai's customer.

*"BS Teratai also faced significant struggles during the COVID-19 pandemic. Activities were greatly reduced as everyone was afraid, and some were also affected by illness during that time. As the tense situation gradually passed, waste collection activities slowly resumed."* (FA, 2025) one of community members.

During lockdown periods, waste collection events were suspended, and many depositors prioritized health concerns over environmental efforts. The economic impact of

the pandemic forced some residents to shift focus toward immediate financial survival, reducing their participation in waste banking activities. Although operations have since recovered, the pandemic or similar unpredictable situation exposed the vulnerability of community-driven initiatives to external shocks.

Waste banks have proven to be an efficient and sustainable approach to waste management (Ismiraj et al., 2023). The success of BS Teratai in waste management and community empowerment lies in its ability to integrate environmental awareness with tangible social and economic benefits. Beyond waste collection, the initiative fosters a culture of responsibility and sustainability, where residents actively participate in reducing landfill waste while simultaneously gaining financial incentives and strengthening community bonds. The increasing participation from residents demonstrates that waste banks can drive long-term behavioral change when properly structured and supported. Moreover, the expansion of BS Teratai's programs, from upcycling workshops to hydroponic farming, highlights the transformative potential of community-driven waste management. These findings reinforce the notion that waste management should not be perceived merely as a technical issue but as a social and economic opportunity that can foster sustainable development at the local level.

While BS Teratai has made significant strides, several operational and structural challenges persist. Community engagement remains inconsistent, with some residents still reluctant to participate in waste segregation and recycling activities due to limited awareness or economic disincentives. Fluctuations in the market price of recyclables further complicate participation rates, as some individuals may lose motivation when financial returns diminish. Additionally, storage capacity constraints and the complexities of e-waste disposal present logistical difficulties that require further investment in infrastructure and regulatory support. These challenges highlight the need for continuous education, stronger policy interventions, and increased funding to ensure that BS Teratai, and similar initiatives, can maintain long-term sustainability. Addressing these barriers is crucial for waste banks to evolve from localized projects into scalable solutions for urban waste management. Innovative waste management solutions are needed to encourage individuals to manage their household waste more effectively by collecting and exchanging it at waste banks for money or groceries, thereby promoting waste reduction, reuse, and recycling while also increasing community income (Muljaningsih et al., 2023).

## **Conclusion**

This study has examined the roles and challenges of Bank Sampah Teratai (BS Teratai) as a community-based waste management initiative. The findings highlight that community-driven waste banks offer an effective and scalable approach to addressing urban waste issues while simultaneously fostering economic opportunities and strengthening social cohesion. Through its structured waste collection, recycling incentives, and environmental education programs, BS Teratai has transformed waste management from a mere disposal process into a participatory and economically beneficial system.

One of the key takeaways from this study is that waste banks can serve as a platform for behavioral change, encouraging communities to adopt more sustainable waste disposal habits. The case of BS Teratai demonstrates that when individuals perceive waste as a resource rather than a burden, their participation in waste management initiatives increases significantly. Additionally, the integration of economic incentives, such as converting recyclables into financial savings, further enhances community engagement and long-term commitment to the program.

Despite these successes, this study also identifies several challenges that must be addressed to ensure the scalability and sustainability of waste banks. Inconsistent participation, limited infrastructure, fluctuating recyclable market prices, and challenges in hazardous waste disposal remain pressing concerns. Without adequate storage facilities, stable financial incentives, and policy support, waste banks may struggle to maintain efficiency and long-term community engagement. Addressing these barriers requires a combination of policy interventions, sustained funding, and enhanced public awareness efforts.

The case of BS Teratai offers valuable lessons for policymakers, researchers, and urban planners interested in scaling up waste bank initiatives in other regions. This study reinforces the idea that waste management is not merely a technical or logistical challenge but a socio-economic opportunity. Waste banks like BS Teratai exemplify how community-led initiatives can successfully tackle urban waste issues while fostering economic resilience and environmental sustainability. By leveraging local knowledge, external support, and innovative economic models, waste banks can serve as an integral component of circular economy frameworks, positioning waste not as an end-product but as a resource for future sustainability.

Future research should explore comparative case studies of waste banks in different socio-economic contexts, evaluating how varied stakeholder engagements, incentive

models, and policy frameworks influence waste bank success. Additionally, further studies could investigate how digital solutions and emerging technologies can be integrated into community waste management systems to enhance efficiency and scale impact. As the world grapples with escalating waste management challenges, community-based initiatives like BS Teratai serve as a beacon of sustainable innovation. The key to achieving long-term waste reduction and resource recovery lies not only in technological advancements or policy enforcement but in empowering communities to become active agents in environmental stewardship.

However, this study is not without limitations. The research focused on a single case study in one urban neighborhood: Bank Sampah Teratai in South Tangerang, which may limit the generalizability of the findings to other socio-economic or geographic contexts. Furthermore, external factors such as government policy shifts, regulatory dynamics, and market price volatility for recyclables were not explored in depth, even though they may significantly influence the long-term sustainability of community-based waste banks. To enhance future studies, comparative analyses involving multiple waste banks across diverse urban and rural areas are recommended. Such studies can help identify contextual patterns, stakeholder dynamics, and localized barriers or enablers. In addition, incorporating a more detailed examination of macro-level influences, such as policy frameworks, institutional support, and commodity price trends, will allow for a more comprehensive understanding of the systemic factors affecting community-based waste management. By addressing these aspects, future research can support the design of more robust and scalable waste bank models that are adaptable to changing environmental and economic conditions.

### **Acknowledgent**

This research was undertaken as a part of a thesis submitted to the University of Indonesia, for the degree of Master of Social Welfare. A special acknowledgment to Bank Sampah Teratai and their community in Pondok Pucung, Pondok Aren District, South Tangerang City, Banten community for allowing me to write their life stories as part of the research.

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