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Organization and Mobilization of Resources in Community-Based Waste Banks Development in Makassar City

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KEYWORDS

community-based waste bank, circular economy, resources management

ABSTRACT:

Introduction: Makassar City produced approximately 102,371 tons of waste per day in 2021. This figure increased by 2.7% in 2022 (SIPSN, 2022). Most of this waste ends up in Landfill (TPA) due to the still low recycling capacity. Efforts to develop waste banks to address this issue have been undertaken in Makassar City since 2014. However, these efforts have still encountered failures, particularly related to sustainability and development. As a community-based effort, waste banks enable individuals to develop throughout the empowerment process by increasing the capabilities of small groups to add internal resources and expand access to external resources.

Objectives: This study aims to identify the organizational strategies employed by each stakeholder to meet the resource needs of waste banks and their limitations.

Methods: This study used a qualitative research methodology, with a phenomenological approach, to investigate the motivations and strategic stakeholders involved in two waste banks, namely Baji Pamai and Alburi. These waste banks are situated in the villages of Karawisi and Bitoa. Twenty informants were interviewed, including government representatives, program facilitators, RT/RW leaders, waste bank managers, and customers.

Results: The actors identified in this study include local government, NGOs, and private institutions. Resources in waste banks can come from actors outside the community as well as from within the community itself. Various measures are taken to meet resource needs and the ability to manage them, including: developing user-friendly technology, adopting a circular economy approach, and enhancing the capabilities of local organizations in managing them.

Conclusions: Each stakeholder has a distinct role in organizing and mobilizing resources for waste banks in Makassar City. However, it is still necessary to enhance the roles of existing stakeholders, especially in engaging strategic partners, to develop waste banks into self-sustaining institutions through a circular economy approach.

1. Introduction

Waste constitutes the largest contributor to climate change. Climate change affects the spread of diseases caused by insects, which are major vectors of zoonotic diseases, especially in tropical regions (1). It was recorded that 60% of infectious diseases originating from animals occurred in 2022 (2). Additionally, climate change exacerbates poor water quality conditions, increasing the likelihood of food and waterborne diseases (3).

Makassar City, one of Indonesia's metropolitan cities, continues to grapple with waste management challenges. With a population of 1,432,189 people, Makassar City produced around 102,371 tons of waste per day in 2021. This amount increased by 2.7% in 2022 (4). Due to

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inadequate recycling capabilities, the majority of this waste ends up in landfills.

The composition of waste and recycling capabilities depend on a country's economic, social, and environmental conditions. Recycling capability correlates with a country's GDP; higher GDP countries produce more paper and packaging waste, while lower GDP countries produce more biodegradable waste (5).

Traditionally, basic waste management stages include waste generation, collection, handling, transfer, and disposal or treatment. In developing countries, efficient solid waste management includes disposal, diversion, or recycling, heavily dependent on national population and gross national income (6). However, relying on landfill waste management incurs high operational and maintenance costs (7).

Reduction is considered a preferable option and a new paradigm in waste management. Efforts focus on preventing or reducing waste production. The next steps involve reuse, recycling, composting, waste-to-energy transformation, with disposal as the least preferred option (8).

Humans are not just members of social communities but also ecological communities (9). As ecological community members, humans must manage their waste effectively to support their own existence and that of other living beings. Addressing waste management issues cannot rely solely on international cooperation with central and local governments; it requires a bottom-up approach (10).

Community-based waste management is defined as waste management and recycling conducted by community-based organizations, applicable in cities, villages, and remote areas such as small islands. This approach is particularly suitable for middle-income countries lacking adequate urban waste management services (11).

Parallel approaches are needed in community-based waste management. The essence of this approach is that communities are responsible not only for delivering services but also for identifying needs, making plans, setting priorities, and monitoring and evaluating programs (12). Governments and other institutions serve as motivators and facilitators. Environmental management requires facilities and the implementation of community-based efforts as strategies for empowerment and increasing access to critical environmental resources, especially land, infrastructure, and services (13).

One form of community-based waste management in Indonesia is evident in waste bank programs. Waste banks are community-based waste management initiatives directly managed at the source. Waste banks operate by providing savings accounts for waste sales to customers, converting values into local currency (14). Efforts to develop waste banks have been underway in Makassar City since 2014. However, these efforts have encountered challenges, particularly regarding sustainability and development (15; 16).

Resource mobilization is crucial for waste bank program development and sustainability. As a community-based effort, waste banks enable individuals to develop throughout the empowerment process by enhancing the capabilities of small groups to increase internal resources and expand access to external resources. Internal resources include those owned and developed by the community, such as land, food, financial assets, local skills, and knowledge. External resources are provided by external parties, such as program managers, in the form of financial assistance, technical expertise, new knowledge, and equipment (12; 17).

The community's ability to mobilize resources internally and negotiate external resources indicates a high level of skill and organization (12). This research aims to identify organizational strategies employed by each stakeholder to meet waste bank resource needs and their limitations. The study involves stakeholders representing various sectors to gain diverse insights, including government, NGOs/CSOs, waste bank managers, and waste bank customers as service users.

2. Methods

This qualitative study was conducted at two waste bank locations in Makassar City: the AL-Bury Waste Bank and the Baji Pamai Waste Bank. These locations represent two regional characteristics of Makassar City: urban and suburban areas with different community characteristics. Informants were then purposively selected based on their role in, and knowledge of, waste management. Data were collected between November and December 2023. Primary data were collected

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through In-Depth Interviews with research participants. Participants were asked to describe all dimensions of their experiences related to the waste bank empowerment process and obstacles in the field. Furthermore, observations were conducted on the environment around the informant, such as waste bank facilities and infrastructure, and scheduled activities, such as transactions at the waste bank (procedures and administration). Apart from the primary data, secondary data in the form of BSU legal documents and other documents used at the BSU were also collected. The data were then analyzed using thematic analysis to understand each stakeholder's role in developing a community-based waste bank in Makassar. Table 1 lists the stakeholders involved in this study.

Table 1. Number and Categories of Research Informants

Stakeholders	Category	Amount
Village Head	Government	2 persons
BSU/RW/RT administrators	Public	6 people
Waste Bank Customers	Public	10 people
CCBO Program Companion	NGO/CSO	2 persons

A thematic analysis was performed on the interview transcripts. The information obtained was analyzed to explore this in more depth. This was followed by coding and creation of themes based on the collected data. This method establishes conclusions and develops a more vivid and appropriate interpretation of the phenomena. The thematic analysis stages used in this study were those described by Braun and Clarke (17). This stage provided systematic guidelines for viewing and processing qualitative information through coding. The analysis stage begins with the introduction of data, namely, transcribing the data, rereading the data, and recording initial ideas. The main ideas are highlighted and written for each transcript. Next, codes were assigned systematically to the entire dataset and the relevant data were grouped with each code. Each theme was coded as a keyword that represented a particular idea when translating and transcribing it. The data were then re-read several times to narrow down the number of codes and categorize them into several central themes. In the final stage of the analysis, conclusions were drawn based on several vital statements/themes representing the data. The resulting data in this research are in the form of statements of ideas and feelings and visual representations depicted using interconnections between codes, which will be explained in the research results section.

3. Results

Organizational strategies and resource mobilization are inseparable elements in community empowerment. Several themes have been identified, including partnerships and resource support, role allocation, decision-making, capacity building, and program sustainability.

Resource Support and Community Capacity Building

In managing the Community-Based Waste Bank (BSU), the management partners and receives support from various stakeholders. Identified stakeholders include the local government through the Subdistrict Office (Kelurahan), the Environmental Agency (DLH), and the Waste Management Company (BSP), as well as Yayasan Lestari Mulia (YLM) as a non-governmental organization. Additionally, short-term partners were identified during interviews, such as corporate social responsibility (CSR) programs from private companies and community service activities from universities. This was expressed in the following interview excerpt:

"*Usually there are private sectors, and there are foundations that usually help from CSR, from foundations as well*."

(SO, 51 years old, Lurah Bitowa, November 7, 2023)

Through interviews, a program officer from YLM, one of the informants in this research, stated that their mentoring program is funded by USAID through the CCBO program implemented by Yayasan Lestari Mulia in collaboration with Waste4Change Indonesia. Before the mentoring process through the CCBO program, an identification process of community resources and needs was conducted. This was done to ensure targeted support. Resources identified can come from within or outside the community, including the potential of the community as agents of behavioral change in their environment, as well

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as the role and commitment of the government in supporting the operation and development of the BSU. Specifically, the subdistrict government plays a role in providing policy and administrative support, such as issuing BSU permits and registration with the Waste Management Company (BSP).

Furthermore, support is provided in the form of facilities for the BSU and community capacity building through various trainings by YLM. These trainings include waste sorting, technical operational and managerial skills in waste management, as well as entrepreneurship training. This was expressed in the following quote:

"*There are many trainings. Oh, there's that turnover harvest. Inviting the community, meaning like this, there are those who have businesses, then there are customers who participate and the managers. Training on waste sorting with the community, Subdistrict Office and RT/RW. There are many but I forget, I can't recall*."

(DI, 39 years old, Secretary of BSU Baji Pamai, November 13, 2023)

Role Allocation Among Stakeholders for Program Sustainability

Interview findings also indicate role allocation among involved stakeholders. Role allocation is crucial to ensure effective and efficient organizational functioning. BSU management, as one of the informants, stated that decisions at the BSU are made entirely by the BSU management, considering input from the community, especially regarding weighing schedules. This is done to increase community participation opportunities in accordance with the empowerment principles applied.

Apart from establishing good organizational governance, various strategies are also implemented to support program sustainability. Informants mentioned that the acquisition of equipment that can be used without supervision and specific skills is crucial for day-to-day operations at the BSU. Financial sustainability is also sought for the BSU. This is pursued through economically-based interventions by connecting the waste bank with strategic partners to obtain the best prices for their recycled products. Such an approach will enable sustainable waste banks and increase community participation due to the tangible impacts felt by the community.

4. Discussion

Empowerment helps communities to act collectively, addressing disparities and gaining various benefits including greater access to resources and institutional transformation. A key aspect of sustainable waste management is treating waste as a resource and applying a comprehensive systemic approach to resource allocation (18).

The stakeholders involved in organizing and mobilizing resources in waste banks are identified in this study. These parties include donor agencies, local and national scale NGOs, private sector entities, and community-sourced resources themselves. This highlights that actors in waste management are predominantly governmental and private sector entities, encompassing both public and private waste management organizations implementing circular economy approaches (19).

Collaboration among local institutions, particularly community-based organizations, in waste management with partners in both public and private sectors should actively focus on developing appropriate approaches and technical tools that support sustainability (20). Such approaches are expected to address various potential future scenarios (21), indicating a new paradigm in environmental governance based on partnerships between government, business, and society (22). To support this, identifying relationships between resources and networks emerging from various stakeholders involved is necessary (23).

Other findings from this research indicate efforts to enhance operational and organizational effectiveness in waste management to promote better resource utilization and renew municipal waste management systems to be more responsible. However, in some instances, roles and responsibilities are only accepted by a few and not well distributed among all stakeholders, posing concerns for program sustainability where managerial aspects often pose challenges that need to be resolved to support responsible waste management efforts (20).

Resources in waste banks are not limited to material aspects; human resource development must also be emphasized. In the development of waste banks in Makassar City, capacity-building efforts focus on five aspects of waste management and entrepreneurial skills. Capacity-building efforts are necessary to enhance waste

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management effectiveness. The lack of capacity among waste management institution staff is a significant issue leading to ineffective city waste management systems (20).

Capacity-building programs mainly rely on NGO and private sector actors, underscoring the need for commitment from various actors, including political leaders, in waste management efforts (25). According to UU No. 23 of 2014 concerning Regional Governments and UU No. 18 of 2008 concerning Waste Management, regional governments have greater roles and authorities in executing waste management compared to the central government, with most regulatory powers lying at the central government level and nearly full implementation authority at the regional government level.

Policy makers and politicians must recognize the need to invest in waste management efforts, as this is a crucial issue. Lack of education programs and awareness activities in formal educational institutions, inadequate waste infrastructure and waste management strategies, micro-management at the local political level, and high waste management costs result in misguided political decisions in waste management strategy development (26).

Enhancing organizational capacity in mobilizing resources in community empowerment is crucial. This development can be pursued through various training programs and community mentoring initiatives initiated by numerous national and international NGOs. Enhancing these skills will help communities better understand waste management, thereby enhancing their capabilities and empowerment (27).

5. Conclusion

Collaboration among local institutions, NGOs, and the private sector is crucial in organizing and providing resources to develop community-based waste banks in Makassar City. Various efforts include establishing facilities to support operations, enhancing local organizational management capacity, and developing sustainable economic approaches to ensure the financial sustainability of waste banks. These initiatives are essential to address current challenges in community-based waste management. Commitment from key actors, including politicians, is vital for investing in effective waste management strategies. Public education and awareness, adequate infrastructure, and sound waste management strategies are critical for making informed decisions and developing appropriate strategic plans for urban waste management.

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