

Community Empowerment-Based Garbage Bank Management System in Bandar Lampung (Case Study of Emak.ID Garbage Bank)

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Abstract. The efforts to overcome garbage problem in Bandar Lampung are a form of a garbage bank by involving the community. One of the garbage banks in Bandar Lampung City is Emak.ID Garbage Bank does it to empower the community to overcome garbage problems while improving the community's economy. This research aims to study the garbage management system and the community empowerment process carried out by the Emak.ID Garbage Bank and the challenges of garbage management in Bandar Lampung City. The method used in this research is descriptive qualitative, with a case study approach focused on the Emak.ID Garbage Bank Data collection from observation, in-depth interviews, and documentation analysis used Miles and Hubberman's interactive analysis model. This research shows that the Emak.ID Garbage Bank management system tries to encourage community involvement in sorting and saving garbage through the community empowerment process by the Emak.ID Garbage Bank is manifested in several activity programs involving the community; one of the challenges in garbage management in Bandar Lampung City is the need for policy realities to form or manage garbage that becomes useful and has economic value.

Keywords: Emak.ID Garbage Bank; community empowerment; garbage management; Final Disposal Sites

1 Introduction

Waste is an important issue to study related to reduction efforts and education to the community so that the problem can be adequately resolved. Garbage management and reduction policies need to be carried out by all parties, including the government, social institutions, companies, and communities independently. This commitment illustrates that garbage management with a sound system can increase public awareness, especially at the stages of sorting, managing, and even recycling, so that garbage has a higher helpful value.

[1] define garbage as something that is not used or not liked or discarded, which comes from human activity and does not occur by itself. Not much different, [2] also defines garbage as

disliked and unwanted garbage material, mainly in the form of materials or scraps that are no longer used and can cause public health and environmental problems. Referring to [2]opinion, garbage can disrupt public health and damage the environment, so it must be appropriately managed to minimize its impact, especially in urban areas with a higher population density than in district areas [3]One of Indonesia's provinces with a high population density is Lampung, which ranks fifth with a population density of 262 people/km² in 2021 [4]. Bandar Lampung is the capital city of Lampung Province and the largest urban area in Lampung. Bandar Lampung City is only 0.57 percent of the total area of Lampung Province, which is 197.22 km. However, the population in 2021 reached 1,184,949 people with a population density of 6,008 people/km² [5]. The population composition is dominated by the young/adult population, namely in the age group of 30-34 years. This is a driver for the development of Bandar Lampung City, especially in terms of the economy because of the sizeable productive-age population.

However, uncontrolled population growth can cause problems in the city even though the continuity of development continues and the economic growth rate continues because improving living standards will tend to increase people's consumption of goods. This condition is the forerunner of garbage generation [6]. Not only in Bandar Lampung City, but garbage has become one of the significant problems experienced by cities in Indonesia [7]

Based on a study by Walhi Lampung [8], the cause of the garbage problem in Bandar Lampung City is the lack of landfills. However, the largest landfill in Bandar Lampung City is the Bakung Landfill. However, the management in this landfill still needs to be more optimal because it uses an open dumping system. [6]The open dumping system is a system of dumping garbage into landfills without any treatment, which causes several problems, such as leachate from rainwater splashing on garbage piles, which then flows into the river area across residential areas. In Bandar Lampung City, the area most affected by this condition is Umbul Kunci Village, Ketaguhan, Teluk Betung Barat Subdistrict.

Bakung Landfill has been operating since 1994 and has an area of about 14 hectares, receiving approximately 800 tons of garbage daily. Based on the presentation delivered by the Head of the Bandar Lampung City Environmental Service, the worrying thing is that this landfill is estimated to be able to accommodate garbage until 2028 [9]. Therefore, innovation is needed for the garbage problem to be adequately resolved and not worsen in the future. Social institutions can carry out this innovation by contributing ideas or ideas for making community empowerment-based garbage banks to form public awareness regarding the dangers of garbage.

It is expected to not only solve the garbage problem but also improve the community's standard of living to a better level. [10]The economic benefits of garbage sorting include education about sorting garbage that can be exchanged for a rupiah. However, apart from these economic benefits, what is more important is to reduce the amount of garbage that goes to landfills so that the type of organic garbage with no economic value can decompose more quickly.

One of the garbage banks in Bandar Lampung City that has attempted to implement a community empowerment system is Emak.ID Garbage Bank was established on April 21, 2021, under the auspices of the Surga Thani Kita Foundation—one of the missions of Emak.ID Garbage Bank is to maintain the cleanliness and health of the community environment. This garbage bank will have 4,506 customers or 172 groups in 2022, with the distribution of groups covering the Bandar Lampung City area. As a result, the tonnage of garbage that has been collected in the first period, from April 2022 to April 2023, for plastic garbage is 28.7 tons, paper garbage is 53.23 tons, metal and plastic garbage is 3.91 tons, and used cooking oil is 1.37

tons [11]. The existence of this garbage bank has also been able to encourage active participation of each community to sort and save garbage that has economic value so that the community becomes more empowered and their environment becomes cleaner; they get direct economic benefits and build awareness among them regarding garbage.

Based on this description, this study aims to examine the process or management strategy of Emak.ID Garbage Bank in carrying out community empowerment to become a reference in overcoming the challenges of garbage problems in Bandar Lampung City. Therefore, there are three research questions: First, how is the management system of Emak.ID Garbage Bank? Second, how community empowerment is carried out by the Emak.ID Garbage Bank. Third, what are the challenges of garbage problems in Bandar Lampung City?

This research uses a descriptive qualitative method with a case study approach at Emak.ID Garbage Bank. Data collection was carried out using observation techniques to describe the activities and involvement of Emak.ID Garbage Bank in garbage management in Bandar Lampung City, in-depth interviews with key informants, namely the manager of Emak.ID Garbage Bank and supporting informants, namely Emak.ID Garbage Bank customers and documentation. The data analysis used in this research is an interactive model. [12] consists of three stages, namely data reduction, data presentation, and conclusion drawing, to answer the three research questions.

2 Result and Discussion

2.1 Garbage Management

Garbage is garbage or garbage products from society or industry that are no longer considered to have use value in the form of solid, liquid, or gas [13]. [14]classifies garbage into two types: organic garbage or garbage from natural materials, such as food garbage, plants, animal carcasses, and feces of living things. At the same time, inorganic garbage comes from artificial or synthetic materials such as cans, bottles, glass, and metal. Both types of garbage require different management.

[15] Basis on the Garbage Management Law, which is derived from Government Regulation Number 81 of 2012 concerning the Management of Household Garbage and Garbage Similar to Household Garbage, [16]and detailed in the Minister of Public Works Regulation Number 3 of 2013 concerning the Management of Household Garbage and Garbage Similar to Household Garbage, garbage management can be carried out through several stages consisting of:

1. sorting in the form of grouping and separating garbage according to the type, amount, and nature of the garbage;
2. collection in the form of collection and transfer of garbage from garbage sources to temporary shelters or integrated garbage processing sites;
3. transportation in the form of carrying garbage from sources or temporary garbage storage sites or integrated garbage processing sites to the final processing site;
4. processing in the form of changing the characteristics, composition, and amount of garbage;
5. garbage processing in the form of garbage return or residual results, and
6. treatment prior to the safe disposal of environmental media.

2.2 Garbage Bank

A garbage bank is a place used to collect garbage that has been sorted; then, the results are deposited at the craft center or garbage collector. [17]. The Environmental Agency defines a garbage bank as a flow or management of inorganic garbage processing from its source to be managed collectively so that it can return to provide benefits. It aims to reduce garbage generated by the community in an integrated manner as part of the inorganic garbage cycle chain. This garbage bank system allows the community to benefit economically from saving garbage.

2.3 Community Empowerment

Community empowerment is an effort to make people independent and have the initiative to improve their lives for themselves or the environment. Community empowerment is a development process where people take the initiative to start a process of social activities to improve their own situation and conditions. Community empowerment can occur if the community participates [18]. Community empowerment is a directed and systematic process involving formal and non-formal organizations. [19]. Community empowerment is an increase in the capacity and capability of a community towards developing a better situation [20].

The essence of community empowerment is to awaken the potential that exists in individuals or groups by encouraging and providing awareness of the potential that the person or group has with the aim of empowerment leading to a state of achievement or which results in the direction of changes in society that are empowered and can change and improve the socio-economic life of their community. [21]. According to [22], community empowerment is an effort to prepare the community along with steps to strengthen community institutions to realize progress, independence, and welfare in an atmosphere of sustainable social justice.

Based on some of these opinions, community empowerment is an effort to explore the potential in society by encouraging people to be aware of making changes for the better.

2.4 Emak.ID Garbage Bank Management System

Emak.ID Garbage Bank It is a community dry garbage processing facility established in April 2021 under the auspices of the Surga Thani Kita Foundation based on digital media. Emak.ID Garbage Bank is also one of the Parent Garbage Banks in Lampung Province, even the largest in Bandar Lampung City. The management system implemented by the Emak.ID Garbage Bank encourages the public to actively participate in sorting and storing garbage that has economic value. Community involvement in this process is the reason for economic community empowerment. In addition to gaining economic benefits, Emak.ID Garbage Bank aims to make the community keep their environment clean and well-maintained and build awareness among the community.

As an institution engaged in garbage management, Emak, ID Garbage Bank has a vision: "The realization of a Clean and Healthy Environment and a Prosperous Community Economy in 2030". This vision is realized through several missions, namely (1) Maintaining Cleanliness and Health of the Community Environment, (2) Improving the Community Economy, (3) Empowering the Potential of Housewives in the Community the Emak.ID Garbage Bank management institution is a foundation because it aims to have no interests other than a clean environment and community empowerment. BSE's institutional form differs from the research

of [7], who studied Bank Sampah Malang (BSM). BSM is a community institution in the form of a cooperative, resulting from cooperation between the Malang City Government and CSR from PT PLN East Java Distribution, which was formed in 2011. Although a different institution, basically BSE, which is still a new institution, has a goal that is not much different from BSM, which is to empower the community and shape people's behavior towards a clean city environment. In addition, the initial idea for forming the two garbage banks is similar, related to the problem of the high amount of garbage in each city.

Based on data from the National Garbage Management Information System (SIPSN), it was recorded that the garbage generation donated by Bandar Lampung City reached 287,057.55 tons of garbage in 2022, with a total of 732,352.86 tons of garbage generation in Lampung [23]. Based on this data, the Bakung landfill in Bandar Lampung is experiencing overflow or overload, and this is because the landfill land area is limited, only about 14.2 hectares, and it can only accommodate 230 tons of garbage per day, making the pile of garbage even more mounting [24]. Based on the problem of garbage that is feared to be increasing, Ahmad Kahirudin Syam took the initiative to form a garbage bank that could later manage and educate the people of Lampung regarding garbage problems, so an institution called Emak.ID Garbage Bank was formed.

However, different institutional forms cause the process of delegating power to be different; if BSM is a cooperative whose highest power is the Annual Members' Meeting (RAT), then BSE in the form of a foundation, the highest power is the General Meeting of Shareholders (GMS), as shown in Figure 1. The GMS is essential in providing corporate decisions and authority as shareholders.

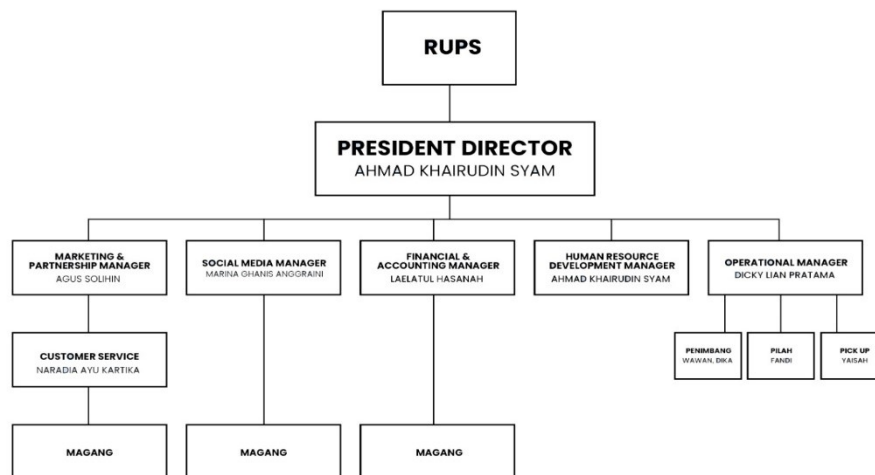


Fig. 1. Management structure of Emak.ID Garbage Bank

The implementation mechanism in the process of recruiting new members at Emak.ID Garbage Bank is carried out in two ways, namely online and offline. Offline recruitment is carried out by cooperating with RT / RW and even housing for every community that holds non-formal agendas such as social gatherings, recitation, or other associations, providing opportunities for BSE to explain some of its work programs. Meanwhile, the online strategy is carried out by establishing social media and websites to help socialize the work programs run by BSE. The

social media used by BSE include Instagram @banksampahemak.id, Twitter @banksampahemak.id, Whatsahaap, 0812-7152-3334, and website banksampahemak. Id. However, the most widely used social media are Instagram and Wahstaap. Each group is made a WhatsApp group with a maximum of 40 members whose customers are generally housewives.

2.5 Community Empowerment by Emak.ID Garbage Bank

BSE aims to empower the community, especially homemakers. This can be seen from the data of customers who have joined the Emak.ID Garbage Bank activities. Based on this data, around 3,351 homemakers in Lampung City are Emak.ID customers. The selection of homemakers as the main target in the introduction of garbage management is because homemakers are considered more thorough in sorting and processing garbage. In addition, the amount of garbage in Lampung City is dominated by household garbage. This is supported by data from SIPSN in 2022 [25], which states that the composition of garbage based on garbage sources in Lampung Province is mainly produced from household garbage (see Table 1).

Table 1. Percentage of Garbage Generated by Garbage Source

Waste Source	Waste Generated (%)
Household	76,88
Market	7,19
Commerce	2,88
Urban	2,86
Public facilities	2,76
Surrounding area	1,73

Source: SIPSN (2022)

This data is supported by the tonnage of household garbage produced by Emak.ID Garbage Bank customers collected in the last year from April 2022 - April 2023 (see Table 2) [26].

Table 2: Household garbage tonnage

Waste Type	Amount of Waste (Tons)
Paper	53,23
Plastic	28,7
Metal and Cans	3,91
Used Cooking Oil	1,37

Source: SIPSN (2022)

Based on this data, paper garbage is the most common problem, and only a few local people can manage the garbage. Therefore, BSE implemented an activity program to guide and assist the

community in sorting garbage. The activity programs implemented include the following (see Table 3).

Table 3. Emak.ID Garbage Bank Activity Program

Program Kegiatan	Bentuk Kegiatan
Waste bank	Establishment of new Emak.ID Waste Bank units in every RT/RW. Weighing and transporting segregated waste in groups.
Emak.ID care	Providing alms from segregated waste which is then distributed to scholarships for orphans, electricity for places of worship, basic necessities for the poor and so on.
Education room	Training and assistance in waste sorting, waste management, and other skills training in the community, so that it can become a learning space for the community to care more about and be able to manage dry waste.
Learning waste management (Berkah)	Tutoring is provided to customers' and non-customers' children aged 5-9 years with payment for the tutoring using dry waste.
Emak.ID Mart	Marketplace for customers to help market the products owned by customers.
Magg Joss (Maggot Joss)	Cultivating BSE maggots and empowering communities in their business processes. Maggot management as a decomposer of organic waste can be part of an internship and research facility (school/college) to analyze the positive impact on improving the environment or from an economic and business perspective.

Source: Dokumen BSE (2023) [27]

The activity programs carried out by Emak.ID Garbage Bank supports community empowerment in Bandar Lampung City because it seeks to make people independent and have the initiative to improve a better life for themselves or the environment. As much as possible, these activity programs foster community awareness of the surrounding environment and increase community creativity and innovation in processing dry garbage into more economically valuable goods.

The Community empowerment carried out by the Emak.ID Garbage Bank is in line with research by [27], which examines the community empowerment process carried out by the Berkah Jaya Plastindo Main Garbage Bank with the West Kotawaringin Environmental Agency, namely with approaches and creative ideas to empower the community in managing garbage banks. The approach, according to [27], included the type of mezzo approach, namely in the form of empowerment by using groups as a medium for educational intervention and training, providing an understanding that garbage can be processed and can provide economic value and preserve the environment, starting from the introduction of profitable garbage bank activities,

grouping the correct types of garbage, and garbage bank flow procedures—the flow or mechanism for implementing the Emak.ID Garbage Bank can be seen in Figure 2 below.



Fig. 2. Implementation Mechanism of Emak.ID Garbage Bank

The garbage selection is done by homemakers who are members of the Emak.ID Garbage Bank is carried out by weighing dry garbage, which will be entered into the customer's savings book according to the agreed amount and nominal money. Homemakers who will carry out the garbage weighing process usually do so at a certain point in the area according to the weighing hour which are carried out at 08.00 to 17.00 according to the operational hours of the Emak.ID Garbage Bank, after the customer has carried out the weighing they will then go through the process of transporting the garbage which will later be collected and taken to the final warehouse of the Emak.ID Garbage Bank.

The community empowerment process carried out by BSE is in line with the stages of community empowerment that have been carried out by Bank Sampah Panca Daya [28]. The stages of community empowerment carried out by Bank Sampah Panca Daya include raising awareness through socialization activities related to garbage banks and how to process garbage; educating the community by providing knowledge related to garbage and providing training; providing assurance to the community through processing garbage into more economically valuable goods; providing guidance and support to customers by facilitating customers so that customers can become independent; maintaining good relations through communicating with customers both directly and through WhatsApp groups and evaluating activities with customers and holding training activities, events, and bazaars that include customers.

2.6 Challenges of Garbage Management in Bandar Lampung City

The challenge of garbage management in Bandar Lampung City is not only enough with public awareness of the garbage sorting process as done by BSE. However, more than that, it requires the reality of policies to shape or manage garbage so that it becomes more valuable and has economic value. This problem is also recognized by BSE, which until now has only been at the garbage sorting stage to form awareness of the people who are members of BSE. Compared to Bandar Lampung City's total population (1,209,937 people) in 2022, the number of people who have joined Emak.ID Garbage Bank until August 2022 is recorded at 4,506 customers or 172 groups, or only about 0.37 percent of the total population.

The percentage is much lower than the number of BSM customers, which can also be considered low, as in the research by [7]. The percentage is much lower than the number of BSM customers, which is 2 percent of the total population of Malang City at the beginning of its formation. This is because BSM was established institutionally on the initiative of three parties: the community, the government, and the private sector. Meanwhile, BSE was initially established based on the initiative of a community concerned about the garbage problem in Bandar Lampung City. Therefore, the garbage management problem in Bandar Lampung City still requires improvement efforts with the support of various parties, including the government and the private sector.

One of these efforts has been carried out by the local government through the Environmental Agency of Bandar Lampung City. DLH Lampung City has 114 garbage transportation fleets in the form of pick-up trucks, which go around every morning to each sub-district and end up disposing of garbage without any management, so the concept of garbage management is crucial to be handled further, even in some regulations, this impact is also stated by the Ministry of Environment and Forestry (KLHK) which delivered an assessment of several cities in Indonesia including Bandar Lampung as the dirtiest big city because it received a low rating in the Adipura Program for the 2017-2018 Period [29].

BSE, as a foundation that seeks to help overcome the garbage problem, still has limitations to make Bandar Lampung City a clean city. The limitations or shortcomings of BSE in its community-based management include (1) the need for more local government support in helping Emak.ID Garbage Bank to carry out its activity program because the assistance provided is only in the form of persuasion assistance, (2) the absence of binding regulations between Emak.ID Garbage Bank and customers, so sometimes there is fraud in weighing garbage and customers who are inactive in the program implementation process.

3 Conclusion

Bandar Lampung City is one of Indonesia's cities with a high population density. This directly affects the production of garbage generated by the population. The high amount of garbage not matched by the increase in the area of landfills (TPA) causes the garbage problem to be increasingly difficult to overcome. One of the efforts that can be made to overcome this problem is to form a garbage bank by involving the community, as has been done by Emak.ID Garbage Bank is a foundation that aims to overcome the garbage problem in Bandar Lampung City by empowering the community to create a clean environment while providing economic benefits for the people who are members—the community empowerment process carried out by Emak.ID Garbage Bank is realized through several activity programs that involve the community, especially homemakers as customers. However, in its implementation, Emak.ID Garbage Bank still has limitations due to the lack of support from the local government and the absence of regulations that bind Emak.ID Garbage Bank and customers, making it prone to fraud. Therefore, support is needed from the Bandar Lampung City government, both through related agencies and through policies made by the House of Representatives (DPR), to encourage the progress of the Emak.ID Garbage Bank activity program so that it can attract more customers, which will automatically empower more people in order to realize a clean Bandar Lampung City and an economically independent society.

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