



Waste bank to improve sanitation community awareness in Ceubrek Pirak Village, North Aceh

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ARTICLE INFO	ABSTRACT
<p>Article history Received: 2022-12-04 Revised: 2023-01-16 Accepted: 2023-01-30 Published: 2023-03-11</p> <p>Keywords Sanitation Waste bank Waste management</p>	<p><i>Some of the problems due to mismanaged waste include the potential of disease caused by bad sanitation and the risk of flooding when waste is thrown away to waterways or rivers. Therefore, it is necessary to sort and manage waste in a good manner to prevent disaster. One of the efforts to foster culture and change people's mindsets can be done by establishing Unimal Waste Bank. The main objective this activity is to develop a system in managing waste, especially inorganic waste through Unimal Waste Bank. The Unimal Waste Bank program is carried out in Ceubrek Pirak village, North Aceh Province for 6 weeks from September to October 2021. It was performed in some stages: location observation, socialization, collecting waste, and selling it. Community awareness and understanding about waste and environmental management is performed before waste bank is develop. The results showed that Unimal Waste Bank is promising to develop in this area due to good community enthusiasm and awareness. Several benefits can be obtained from this activity, for instance they receive profit from selling inorganic waste to Unimal Waste Bank. Moreover, they also have a chance to receive rewards at the end of each month during this program. The waste bank is expected to run well and develop various services to improve people's welfare and quality of life.</i></p>
<p>Kata kunci Bank sampah Pengelolaan sampah Sanitasi</p>	<p>Peningkatan kesadaran masyarakat terhadap sanitasi melalui program bank sampah di Desa Ceubrek Pirak, Aceh Utara. Beberapa masalah akibat pengelolaan sampah yang tidak tepat, antara lain potensi penyakit akibat sanitasi yang buruk dan risiko banjir saat sampah dibuang ke saluran air atau sungai. Oleh karena itu, diperlukan upaya pengelolaan sampah yang baik untuk mencegah terjadinya bencana. Salah satu upaya untuk menumbuhkan budaya dan mengubah pola pikir masyarakat dapat dilakukan dengan mendirikan Bank Sampah. Tujuan utama kegiatan ini adalah mengembangkan sistem pengelolaan sampah, khususnya sampah anorganik melalui program Bank Sampah Unimal. Program Bank Sampah Unimal dilaksanakan di desa Ceubrek Pirak, Provinsi Aceh Utara selama 6 minggu pada bulan September hingga Oktober 2021. Kegiatan ini dilakukan dalam beberapa tahapan, yaitu observasi lokasi, sosialisasi, penerimaan sampah dan penjualan sampah pengepul. Sebelum kegiatan dilakukan, survey terhadap pemahaman masyarakat terkait pengelolaan sampah dan lingkungan diadakan. Hasil penelitian menunjukkan bahwa Bank Sampah Unimal cukup menjanjikan untuk dikembangkan di kawasan ini karena antusiasme dan kesadaran masyarakat yang baik. Beberapa manfaat yang dirasakan melalui kegiatan ini, antara lain masyarakat menerima keuntungan dari hasil menjual sampah anorganik. Selain itu, masyarakat juga memiliki kesempatan untuk menerima hadiah di setiap akhir bulan selama program ini berlangsung. Bank sampah diharapkan dapat berjalan dengan baik dan mengembangkan berbagai layanan untuk meningkatkan kesejahteraan dan kualitas hidup masyarakat.</p>

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INTRODUCTION

As stated in Indonesian government regulation No. 18 of 2008, waste is the residue of human daily activities or natural processes in solid form. Meanwhile, in regulation No. 81 of 2012, Management of Household Waste and Household-like Waste regulation, it is explained that household waste is waste that comes from daily activities in the household which does not include excrement and specific waste.

The solid waste management system begins with the need to move used materials from settlements to special disposal sites to maintain cleanliness and sanitation. However, significant changes in terms of the quantity and composition of waste cause new problems, including uncontrolled stockpiling which contaminates groundwater, increasingly limited landfills (Suardi et al., 2018), social and health problems in the surrounding community landfill. Thus, solid waste management is built in an integrated manner starting from prevention to disposal, with the highest hierarchy and the one that is most expected to occur is prevention. This aims to maintain the conservation of materials, energy and land so that they can be utilized as much as possible and to protect human health and the environment. In this case, bank waste is managed as a system that connects the community with user materials.

The waste bank is an embodiment of community cooperation in managing their own waste. In its management, the community must have a creative and innovative spirit and an entrepreneurial spirit so that waste banks can be self-supporting. The waste bank is not infrequently used as a regional business organization to support the people's economy. Apart from that, it also helps improve the economy which has been hit hard by the pandemic. During the COVID-19 pandemic, it was reported that the amount of waste disposed of in landfill was significantly reduced, due to the closure of public facilities, shopping centers, schools, offices, etc. However, the waste in household activities actually increases in line.

In addition, the waste bank can also encourage people to change their behavior in disposing of waste, including sorting and managing waste, which has an impact on reducing household waste generation. On the other hand, waste bank also impacts community economic growth (Nisa & Saputro, 2021); (Masruroh et al., 2022). Moreover, this program supports the achievement of Sustainable Development Goals (SDGs) for improving community sanitation by making the environment clean, healthy, and comfortable.

Waste bank is a form of community cooperation in managing their own waste. In its management, the community must be creative, innovative and have an entrepreneurial spirit so that the waste bank can be self-supporting. Nowadays, waste bank is used as a regional business organization to support the community economy. This become a new paradigm to treat waste as an economical resource and can be utilized (Noventi, 2020). In addition, it also helps improve the economy that has been hit hard by the pandemic. During the COVID-19 pandemic, it was reported that the amount of waste disposed of in landfill was significantly reduced due to the closure of public facilities, shopping centers, schools, offices, etc. However, household waste increases, as reported by (Yousefi et al., 2021);(Yenni Ruslinda et al., 2020). This is in line with the Central Bureau of Statistics report, which states that household consumption is the highest source of growth until the 4th quarter of 2021. The Indonesian economy in 2021 grew by 3.69% after experiencing a growth contraction of 2,07% in 2020 due to the pandemic, which decreased drastically from 5.02% in 2019 (Badan Pusat Statistik, 2022). During the COVID-19 pandemic, when the community's economy was collapsing micro and macro, waste banks were promising to become a new economic source (Wulandari et al., 2017); (Ibad & Sakuntalawati, 2020).

Waste banks are one of the components of the circular economy in Indonesia. The circular economy is an approach that focuses on systems and involves industrial processes and economic activities that are designed in a restorative or regenerative manner, retaining the value of the resources used in these processes and activities as long as possible, and aims to eliminate waste through design, product, and superior systems (including business models (SAVE OUR SEAS 2.0 ACT, 2020) . The circular economy is also defined as being able to reduce material use, redesign products, and reuse "waste" as a resource for producing new materials or products (US EPA, 2022). Inorganic that can enter the circular economy system through the waste bank are recyclables and reusable materials such as metal, plastic, glass bottles, etc.

Unimal waste bank turns out to be the first waste bank in the target area, i.e., North Aceh District. The waste bank model is created by intervening in the culture and behaviour of the local community in order to improve environmental sanitation and the economy. The waste bank model that is implemented can be an asset for the government as well as recycling businesses and community organizations to duplicate the same activities in other regions. The objectives of this activity are to prove the benefits of the Unimal Waste Bank program in environmental and financial management.

METHOD

Unimal Waste Bank was held in Ceubrek Pirak Village, Matangkuli District, North Aceh Regency (Figure 1). The activity lasted for 3 months, August-November 2021. The location of Ceubrek Pirak Village is quite far from the city center, and its non-strategic conditions have resulted in a lack of government attention. One of the problems which needs more concern is environmental sanitation.



Figure 1. The location of the Unimal Waste Bank, Ceubrek Pirak Village, North Aceh Regency

Most of the population of Ceubrek Pirak Village are in the middle to lower economy with livelihoods as farmers and traders. Therefore, cultural and economic interventions through waste banks are considered to be useful and right on target. This program is called the Unimal Waste Bank.

This activity will be carried out by involving several partners who are directly related to the focus of problem-solving in the intended area. The partners engaging were local village officials and the North Aceh district local government. In addition, there are 20 students from several study programs at Malikussaleh University participated in this program as an implementation of a community service program.

Data collection in this activity was carried out through several stages, including field observations; socialization to the community to engage mutual cooperation of clean and healthy environment; provide guidance to create a sustainable Waste Bank; Scheduling inorganic waste collection once a week; and then customer funding. To implement a reward-plus system, we provide rewards for active customers in order to increase their awareness. Data collection using the observation, interviews and questionnaires methods. The subjects involved in this activity were from Ceubrek Pirak village with a population of 101 families. Community understanding and motivation to participate in this Unimal Waste Bank activity was surveyed with a number of waste bank customers before and after the activity took place. Furthermore, data will be obtained on the amount of inorganic waste and number of customers as success indicator of the program. Figure 2 shows the flowchart of the Unimal Waste Bank activities.

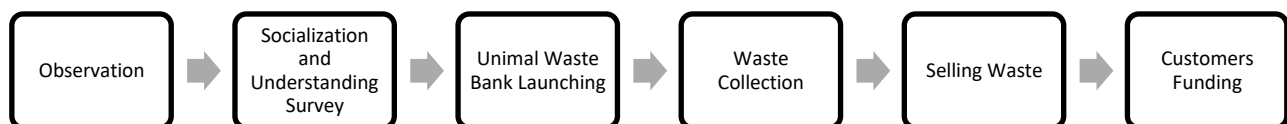


Figure 1. Flowchart program Unimal Waste Bank

RESULTS AND DISCUSSION

Local governments must be supported for the development and improvement of solid waste treatment facilities as well as helping to change people's habits not to throw garbage carelessly. However, there is a lack of attention of the government in this area. The government does not provide garbage trucks to service this area, so the people are forced to manage their own waste by burning it, burying it manually, or even throwing it into the river. This mismanagement of waste could be harmful to the environment and sanitation. Ceubrek Pirak village location is nearby Krueng Keureuto river, which is hit by floods annually. Moreover, the area is classified as a medium to high event of flood disaster (Fadhliani et al., 2022).

This condition triggered the idea to develop a Unimal Waste Bank program in Ceubrek Pirak Village. The Waste Bank proposed an understanding to the public that household waste still has economic value by segregating it. Moreover, Unimal Waste Bank is also a communicator between collectors and the community. The mechanism is carried out by accommodating and recording waste that is deposited by the community into a saving book. Afterward, the money can be collected according to the agreement.

According to (Suryani 2014), a waste bank is an alternative to waste management to help solve the waste problem in Indonesia. The community will voluntarily sort waste to be deposited in the Waste Bank in order to get money (Nisa & Saputro, 2021).

The activity begins with carrying out surveys and field observations. Furthermore, direction and understanding were given regarding the Waste Bank Program through socialization activities to several community representatives from each

head of the family as well as local government. This activity aims to attract people who want to participate in Unimal Waste Bank Program.

Before Unimal Waste Bank was developed, an initial study was carried out regarding the understanding of the community in waste management activity (Table 1). The waste bank sustainability business is strongly influenced by the social values of the community, where the community is aware and willing to voluntarily and participate without being forced (Indrianti, 2016). This survey involved 37% of Ceubrek Pirak village population, with 78% of them was female. From the questionnaire, it is known that the mainly, 76% of the community has disposed of waste in trash bin, while the rest admit that they have not disposed of waste correctly. For the most part, namely 65% of the community, have sufficient awareness in understanding waste management as seen from their concern for reminding others not to litter as well as picking up and disposing of waste if they see it scattered around. About 49% of the community can distinguish between organic and inorganic waste. In addition, 100% of the people who are willing to sort their waste turn out to be as much as 59% have sorted their waste at home. The entire community surveyed supports a waste management program in the village. However, only 49% of the public had heard of the waste bank program. The biggest community factor for not disposing of waste appropriately is due to the unavailability of trash bins; second, there are no garbage collector; and the last one is in consideration of the trash dump area too far away (Figure 3). One of the common problems found in waste management is the lack of supporting facilities, such as collector vehicles (Marasabessy & Rumodar, 2022). However, it can be concluded that the waste bank program is promising to develop in this area in order to be a solution in waste management.

Table 1. Community Awareness in Waste Management

No	Indicator	Percentage	
		Yes	No
1	Are you disposed of waste in garbage bin	76%	24%
2	Are you going to remind others not to disposed of garbage carelessly?	65%	35%
3	If you see waste around, will you pick it up and throw it in the trash bin?	65%	35%
4	Do you know what is organic and inorganic waste	49%	51%
5	Are you willing to do sorting waste at home?	100%	0%
6	Have you done sorting waste at home?	59%	41%
7	If there is a waste management program in your environment, will you support it?	100%	0%
8	Have you heard about waste bank?	49%	51%

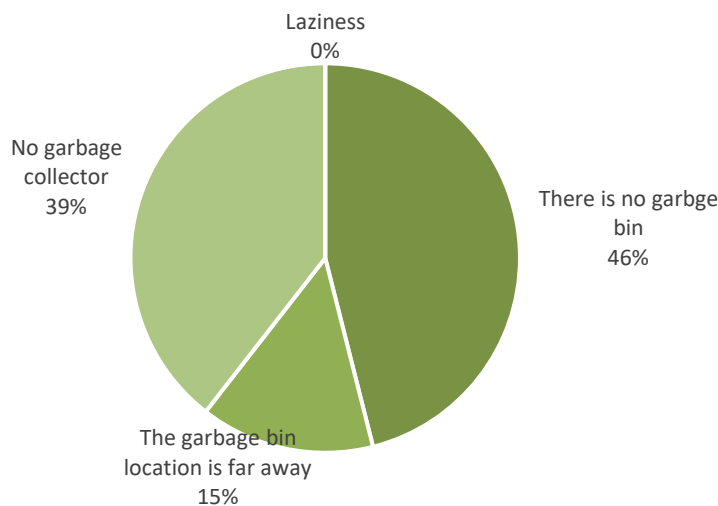


Figure 3. The reason why people don't dispose of waste appropriately

The Unimal Waste Bank was launched after the socialization, which was attended by representatives from Unimal, local governments and invited the entire community of Ceubrek Pirak Village (Figure 4). The waste bank business model has the flexibility to adapt according to the needs of society, such as savings, health, community entrepreneurship and energy (Dhewanto et al., 2018). Unimal Waste Bank itself adopted savings business model to run the activity. The prospective customer registers at the Unimal Waste Bank to get a savings book. Every customer who registers will be given a savings book to record the inorganic waste deposited and the funds received (Figure 5). The funds obtained are the result of selling the waste bank to partner collectors.



Figure 4. Unimal Waste Bank Launching

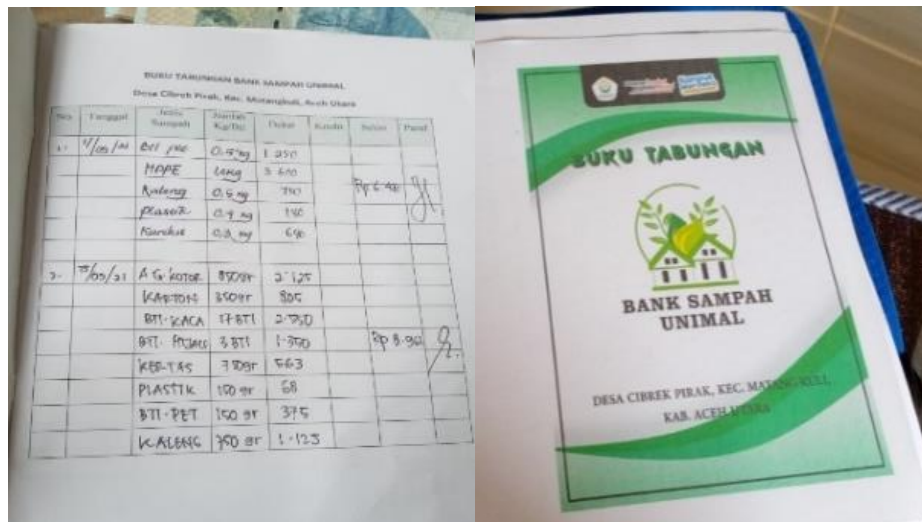


Figure 5. Savings book for Unimal Waste Bank customers

Women are constantly involved in household waste management processes (Mujahiddin et al., 2018). However, apart from targeting housewives, the waste bank program has also proven to be attractive to children. This can simultaneously instill a culture of sorting waste and change the mindset of future generations in interpreting waste for personal consumption. To increase youth awareness in managing waste, further promotion is needed such as outreach and environmental competitions between schools (Miftahorrozi et al., 2022). Figure 6 shows a boy customer who is currently registering for Unimal Waste Bank.



Figure 6. Children customer Unimal Waste Bank is registering for himself

Waste problems are very close to sanitation and health, especially during the Covid-19 pandemic. Therefore, apart from promoting environmental hygiene and adding new economic value through Unimal Waste Bank, we also promote the community to care about their health, keep distance and use masks. Hence, in the program, every customer who comes to Unimal Waste Bank will be given a mask to promote health education (Figure 7).

The waste brought by residents is very diverse, some have economic value and some don't. Therefore, the waste will be sorted according to its type. Unimal Waste Bank could accept some of the valuable waste, such as PET Bottles, Broken Glass, Syrup Bottles, Glass Bottle, Cardboard, Cans, Newspapers, Plastic Bag, Torn Paper, Polypropylene (gallon caps), HDPE (Shampoo, Powder, Soap bottles), Gross PET and metal. Figure 8 shows the segregation and weighing activities of several types of waste that have economic value and can be deposited into the Unimal Waste Bank. Figure 9 show the amount of inorganic waste deposited in the Unimal Waste Bank during the activity. It is known that the most amount of waste generated is syrup bottles, broken glass follow with cardboard and other materials. From various plastic type collect, the most deposited is PET.



Figure 7. Mask distribution for Unimal Waste Bank customer



Figure 8. Unimal Waste Bank activities

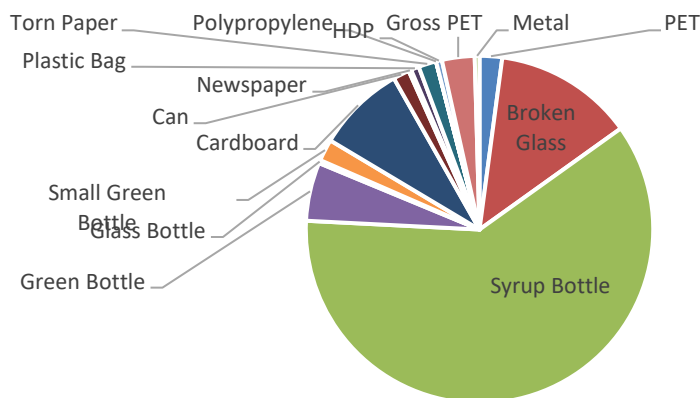


Figure 9. Type of waste deposited in the Unimal Waste Bank

The variations in the types and prices of inorganic waste received by the Unimal Waste Bank are adjusted to the partner collectors. The price given to the public is also fluctuating. To reduce the risk of loss by the Waste Bank, a fairly

high price difference must be taken between the market price and the price purchased from the community. In this activity, the price difference for each type is taken to be around 100-200 rupiah per volume of goods, and a profit of 8.2% is obtained. This advantage can be enlarged by cooperating with collectors or related agencies to reduce the cost of picking up waste.

One of the solution to make the waste bank program successful is through collaboration and coordination between stakeholders, including community participation (Fatmawati et al., 2022). Unimal Waste Bank program has not run optimally due to the absence of intensive support from local governments. In small towns, waste management is still centered on the government with constraints such as regulatory issues (Zulfikar & Rinaldi, 2019), lack of resource and awareness (Wibisono et al., 2020). However, paying attention to financial inclusion can be very helpful in policy makers' efforts to improve waste management, as financial inclusion enables households to choose healthy waste disposal (collection) methods (Immurana et al., 2022). In order to increasing waste bank income, master waste bank run by government can act as a price chain breaker, because the waste bank directly sells waste to large companies, no longer through collectors (Choirunnisa & Ngatindriatun, 2021).

Increasing the role of stakeholders through company CSR funds could be considered (Widyaningsih, 2018), since North Aceh Regency is surrounding by multinational company. The CSR program success story in improving people's behavior through waste banks has been carried out by PT Pertamina (Persero)(Rakhmadany et al., 2021), PT Holcim (Nurjanah et al., 2016), PT Pertamina Patra Niaga DPPU Pattimura (Souisa et al., 2022), etc.

The successful indicator for a waste bank is seen by the amount of customer. So that, to attract more people to be a customer of Unimal Waste Bank, a reward for active customer was held. The low number of waste bank customers results in a low rate of recycling, thus it is not significant in reducing waste in the environment (Rachman et al., 2021). Finally, this program has attracted 55 customers from 101 household, during 6 weeks or 6 times waste collection during September-Oktober 2021. By increasing the number of customers, it can be explained that the existence of a waste bank can increase public awareness in sorting waste and managing inorganic waste to be more valuable (Yuli Astuti et al., 2022). Strategies that can be applied to improve the waste bank performance, including training on creation skills, composting digital marketing and other skills to waste bank customers and managers (Sinaga et al., 2021). Even though, most expected transformation is reducing community waste generation does not have a direct impact, at least waste that goes to the landfill or discharged into the river can be reduced (Muliawaty et al., 2022).

CONCLUSION

Unimal Waste Bank program has been working successfully for 6 weeks. This program promotes waste management by offering added economic value to household waste. Besides, this activity support government program to resist the Covid-19 pandemic by applying health protocol during Unimal Waste Bank activity. The suggestions for implementing the Unimal Waste Bank Program include: (a) the successful implementation of the Unimal Waste Bank Program must be fully supported by the government and all elements of society as an effort to empower and change community PHBS behavior; and (b) with the existence of the Unimal Waste Bank it is hoped that it can continue in a sustainable manner to manage existing waste.

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