

**THE EFFECTIVENESS OF THE 3R (REDUCE, REUSE, AND RECYCLE)
PROGRAM IMPLEMENTED THROUGH WASTE BANKS IN
EMPOWERING THE COMMUNITY ECONOMY IN GORONTALO
(A Case Study of Parent Waste Bank in Wongkaditi Timur Kota Utara Gorontalo)**

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ABSTRACT

This research aims to analyze and describe (1) the effectiveness of the 3R program implemented through waste banks in empowering the community economy in Gorontalo and (2) the supporting and inhibiting factors of the 3R program implemented through waste banks in empowering the community economy in Gorontalo. The research method used is qualitative. The research data source is primary data collected using interviews. The data analysis technique used refers to Miles and Huberman's. The research findings are that (1) the 3R (reduce, reuse, and recycle) program implemented through waste banks has effectively empowered the community economy in Gorontalo. The program is progressively developed, indicated by the fact that waste in Gorontalo has been reduced to the target determined. Contrastively, the city management system comprising selecting, transporting, and processing is still poor. In terms of the economic use, the system does not give significant contributions to the economic improvement of the surrounding community that becomes the customer of waste banks and (2) the crucial internal factors of the 3R program the waste bank owner's commitment to introducing the program and the employees' commitment to earning the incentive. Meanwhile, the inhibiting factors are the narrow waste banks and insufficient tools and facilities that support the 3R (reduce, reuse, and recycle) program. Furthermore, the external factors are the government, the cooperation with the waste bank owners in Gorontalo, and a fixed market share where the waste can be sold. Moreover, the inhibiting factors are the community's perception of waste banks. They perceive small uses of the waste banks and they reluctantly spare time to sell waste in waste banks.

Keywords: *3R Program, Economic Empowerment, Waste Bank*

INTRODUCTION

The government is continuously facing the waste problem as the main problem in health and the living environment. Waste contaminates the environment and may create pollutions, one of which is air pollution. Over-piled waste that is not immediately handled and transported and improperly closed transporter may cause a bad smell. Evidently, the prioritized aspect of waste management is the master plan of drainage arrangement instead of human and cultural aspects when humans and cultures are also the most important aspect besides the technical ones (Kamuli *et al.*, 2016:9).

The central government has authorized the local government through the local autonomy program. It means that together with private parties, the local government can independently manage waste, starting from recycling/managing, transporting, and processing waste. The independent waste management is regulated in the Law Number 18 of 2008 on Waste management and the Ministry of Home Affairs Regulation No. 33/2010 on Procedures for Waste Management.

Waste will turn to be serious when they start to pollute the environment and thus turn to be hazardous. Waste is hazardous when it is a potential threat to humans and the environment. At that point, waste must be properly managed. Designing a waste management system for a certain area needs preliminary data i.e. the generation, composition, and characteristics of the waste produced in the area (Damanhuri and Padmi, 2004). Waste is a serious problem in Gorontalo, as clarified in Figure 1.3.

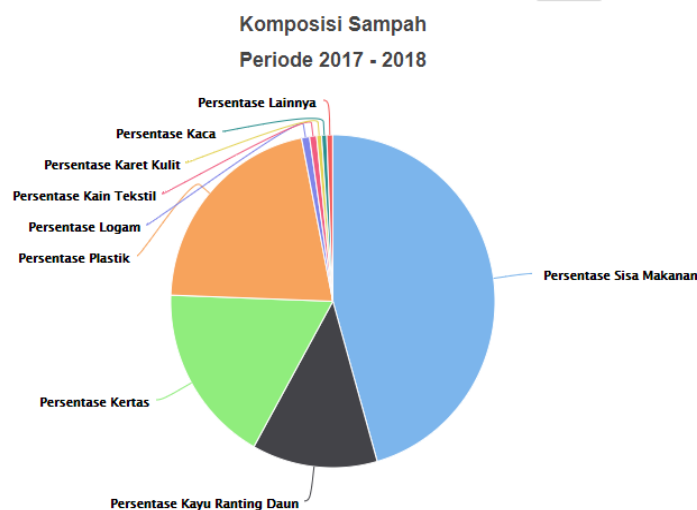


Figure 1 Waste Compositions in Gorontalo 2017-2018

(Source: Indonesia Waste Information System)

Figure 1 indicates a waste percentage of >100% consisting of leftovers of 45.60%, plastic waste of 21.30%, paper waste of 17.50%, leaf, branch, and wood waste of 12.50%, textile waste of 0.70%, rubber and leather waste of 0.50%, glass waste of 0.50%, and other waste of 0.60%. It is impossible to entirely obliterate waste yet we can reduce the amount using the 3R concept, preventing waste piling. The government has stipulated determined the mechanisms for household and household-like waste management through the Law Number 18 of 2008 Article 20 Paragraph (1) on Waste Reduction using the 3R concept (reduce: reducing waste, reuse: limiting waste generation, and recycle: recycling and/or reusing waste).

The community-based waste management using the 3R concept aims to reduce waste from its sources, reduce environmental pollution, contribute to the community, and change the community behavior toward waste. Successful community-based waste management using the 3R concept is determined by the community participation. The community behavior, that was “throwing off” waste, should be altered to “managing” waste. The waste management using the 3R concept should be effectively runs in accordance with Dun’s indicators of the effectiveness of policy (2003:430) that are efficiency, adequacy, equity, responsiveness, and appropriateness.

Besides processing waste to compost or utilizing waste as a source of electricity (garbage power plant), implementing the 3R (reuse, reduce, and recycle) concept is the affordable and easy solution to the environmental preservation. The community, after taught how to manage waste from its source can implement the 3R concept. The community participation in waste banks is expected to reduce the amount of waste disposed to landfills, also reducing complex waste problems. Besides, in terms of social, environmental, and economic aspects, the

community will be empowered. Furthermore, through the 3R program, the community will not only clean and preserve the environment but also earn some money from waste.

The community economy empowerment using waste banks aims to create a modern economy. As the more advanced technology development impose the era development upon anybody, we must not build upon the traditional economy. Waste banks will make the community more independently determine their economic development.

Waste banks give a positive impact on the community, and with them, we can bring changes in the economy, from the traditional to the modern system, from the less to the more established economy, and from the dependent to the independent economy. Waste banks also contribute to a more established community economic empowerment. Waste banks should have an established organization that also contributes to the management and operation of a community economic system. Waste banks should also be equipped with tools that can support their management and operation.

Based on the research background, we are interested to study the implementation of the 3R (reuse, reduce, and recycle) program to manage waste in the parent waste bank in Wongkaditi Timur Kota Utara, one of the waste banks in Gorontalo. We conduct a study titled “The Effectiveness of the 3R (Reduce, Reuse, and Recycle) Program Implemented through Waste Banks in Empowering the Community Economy in Gorontalo (A Case Study of Parent Waste Banks in Wongkaditi Timur Kota Utara Gorontalo)”.

RESEARCH METHODOLOGY

The research location is at the parent waste bank in Wongkaditi Timur Kota Utara Gorontalo. The location is selected due to the following essential considerations i.e. (1) The location contains the data and possible explanation of the researched issue and (2) The data collected at the location are reliable and temporal, economically, spatially, affordable. The data analysis technique used in this research is Miles and Huberman’s interactive model analysis.

RESEARCH FINDINGS

A. Research Findings

1. Effectiveness of the 3R (Reduce, Reuse, and Recycle) Program Implemented through Waste Banks to Empower the Community Economy in Gorontalo

The effectiveness of the 3R (Reduce, Reuse, and Recycle) implemented through waste banks to empower the community economy in Gorontalo is as follows:

a. Effectiveness of the 3R (Reduce, Reuse, and Recycle) Program in Terms of its Efficiency

A correspondent with the participative principle, waste management activities using the 3R (reduce, reuse, and recycle) concept is based on what the community needs so it should give benefits to the community, indicating the success of the activities. One of the ways to improve the economy and use household wastes is to provide lay stalls with the implementation of 3R (Reduce, Reuse, and Recycle) concept, enabling the community to sell and save at waste banks easily. Waste banks raise our awareness that we can both preserve the environment and improve the economy of the community that registers themselves as waste bank customers.

Our observations reveal that 10 of 100 customers show a monthly active operation. Customers’ income is determined based on the type and the amount of waste submitted to waste

banks. There are three types of waste i.e. plastic, paper, and carton, each comes with a different price. Plastic waste costs IDR2,000/kg; while paper and carton waste cost IDR1,000/kg and IDR500/kg respectively.

The customers earn some money in accordance with how much waste they can collect and submit to waste banks. They earn the money as immediately as they submit waste. In January, customers could only submit waste twice a month when the more waste we can submit to waste banks, the more money we earn. Through waste banks, we put much expectation to the Gorontalo community that they may be more aware of environmental hygiene. Waste is not a mere object you can throw out. Instead, you can earn more income by collecting waste. Furthermore, the community economy will be more empowered.

An article (<https://mediaindonesia.com> retrieved March 25th, 2020) argues that waste banks apparently give a positive impact on the environment, society, and economy. It contributes to reducing national waste, give more job opportunities, and provide more income. The more waste you save, the more money you can earn and use to, for example, pilgrimage, education, and others. As we have already known, pilgrimage costs a considerable amount of money. The high-income society may be able to repeatedly do pilgrimage when the low- and middle-income society may only have the idea without any supporting fund. Therefore, the facility provided by the government, with community participation, will raise the community's awareness of the significance of collecting and saving waste.

b. Effectiveness of the 3R (Reduce, Reuse, and Recycle) Program in Terms of its Adequacy

Enterprising the 3R (Reduce, Reuse, and Recycle) program, the government expects the community participation in waste management. With the community activeness and awareness, the program will be effectively run, preserving the environment. Besides, the saving-waste program will elevate the community economy. Waste banks are equipped with some initiative programs that ask the community to sort and collect waste. The initiative programs aim to reduce the amount of waste disposed to landfills besides giving profits. With the programs, the community starts contributing to waste collection. The participation of society is crucial to realize the vision of a clean and waste-free city.

Waste collection is started with waste transfer from dustbins, lay stalls, 3R (Reduce, Reuse, and Recycle) lay stalls, to landfills. The staff should do the activities and not neglect the type of waste they are handling. When sorting waste, the staff put waste into a container in accordance with the type of waste. The container is a large bag made of recycled materials. The criteria of color and type of waste are as follows: (1) Green bag for organic waste, (2) Yellow bag for inorganic waste, and (3) Red bag for hazardous and poisonous waste.

c. Effectiveness of the 3R (Reduce, Reuse, and Recycle) Program in Terms of its Equity

Waste banks are analogous to the local policy regulated by Gorontalo regulation. Waste banks may meet exacting challenges but continuously make progress indicated by their large number of customers. It is difficult to raise people's awareness. They seem arrogant and pay little attention to the environment. Also, they perceive that saving waste wastes their time. The perception passes through generations until nowadays, there are still many people that know about but reluctantly save waste. However, the majority of Gorontalo people, manifested by their participation, have understood the significance of saving waste at waste banks.

d. Effectiveness of the 3R (Reduce, Reuse, and Recycle) Program in Terms of its Responsiveness

The staff at waste banks is responsive and consistently persuades the customers and society to save waste; even waste banks are open on weekends, making those that have the only spare time on those days able to collect and save waste at waste banks. Dustbins have been provided in all sub-districts and any house should have dustbins. Customers should sort and collect waste based on the type of waste and put it into the provided dustbin before it is transferred to waste banks. One of the customers of parent waste banks in Kota Timur is schools. At schools, students are trained on how to sort and collect waste at the provided waste banks. The collected waste is then transferred to parent waste banks.

Waste management requires community participation. The more the people participating in waste saving, the more the money they can earn to elevate their economy. It is evidenced by the community income. Nevertheless, we can still see waste anywhere and low awareness of waste saving. The waste bank stakeholders should introduce the significance of waste banks to the Gorontalo community and make socialization with the community through the heads of villages or sub-districts about how to save waste and what benefits they can get for saving waste at waste banks, persuading them to be the customers of waste banks.

e. Effectiveness of the 3R (Reduce, Reuse, and Recycle) Program in Terms of its Appropriateness

The waste bank program is proven useful. The customers that contribute to the 3R (Reduce, Reuse, and Recycle) program are both households and educational organizations. After collected, waste will be processed. The processing is conducted at landfills to retransfer waste and/or waste residues to the environment. However, reducing is still ineffective as many customers do not sort waste solemnly. They sometimes mix waste in one before transferring it to a waste bank.

Only the staff of waste banks implements the Reduce program because the community is still unwilling to participate in the 3R (Reduce, Reuse, and Recycle) program. The community is unaware of the significance of waste sorting, costing the staff of waste banks some money for waste management. The knowledge of the type and characteristics of waste is fundamental in determining how to manage waste. According to the Law of the Republic of Indonesia Number 18 of 2008 on Waste Management, waste managed comprises a. household waste, b. household-waste-like waste, and c. specific waste. MP argues that sorting waste should be done by the expert.

Waste should be sorted correctly based on its types and characteristics. The staff of waste banks should sort and categorize waste correctly after collecting and processing the waste. Law Number 18 of 2008 on Waste Management Chapter I Article 1 Paragraph 3 defines waste management as systematic, holistic, and sustainable activities included reducing and handling of waste. Waste reducing activities can be in the form of delimiting waste generation, recycling waste, and reusing waste. Sorting is one of the main activities in the recycling process. Handling and sorting activities should be adjusted to the type and characteristics of waste. Waste is collected in the waste source and transferred to landfills. Reducing is an enterprise to reduce the amount of waste transferred to and processed in the final processing place.

The potential of waste generation in the latest two years i.e. 2018 and 2019 increased by 1% from 50,490 tons (2018) to 51,194 tons (2019). Reduced waste in source waste banks is 10,493.75 tons or 20% of waste generation. It indicates that the government has achieved the target of waste reduction that was 20.50% in 2019. Waste delimitation is 1,368.75 tons. The amount of waste used in waste sources is 9,125 tons. Besides waste reduction, another enterprise regarding waste is waste management. 29,565 tons, or 57.75% of waste is disposed to landfills and dustbins. The percentage is still below the target that is 70%.

According to the management data, the Gorontalo government has handled and managed 40,059 tons or 78% of waste per year. Meanwhile, unmanaged waste is 11,135 tons per year. Considering the increasing potential of waste generation, waste management should be more effective. Identification of waste generation helps us determine the best waste management system for an area. Any data available can also be used to determine an alternative solution to an effective and effective waste management system.

The waste data registered in waste banks and waste collectors are cans, cartons, plastic, metal, paper, glass, and others. Moreover, the types of waste sorted and transferred to the landfills that implement the 3R (Reduce, Reuse, and Recycle) program are leftovers and leaves. Based on the achievement of waste management of 78%, the implementation of the 3R (Reduce, Reuse, and Recycle) has been effective.

2. Supporting and Inhibiting Factors of the 3R (Reduce, Reuse, and Recycle) Program Implemented through Waste Banks to Empower the Community Economy in Gorontalo

The supporting factors of the 3R (Reduce, Reuse, and Recycle) program implemented through waste banks to empower the community economy in Gorontalo are as follows.

a. Internal Supporting and Inhibiting Factors of the 3R (Reduce, Reuse, and Recycle) Program

There are various internal factors of the 3R-(Reduce, Reuse, and Recycle)-program-based waste management identified at *Bank Sampah Mutiara*. The crucial internal factors are the waste bank owner's commitment to socializing the program and the staff's commitment to earning incentives. Meanwhile, the inhibiting factors are relatively narrow waste bank areas and the tools and facilities that insufficiently support the progress of the program that is the 3R-(Reduce, Reuse, and Recycle)-program-based waste management. The internal factors should thus be improved.

b. External Supporting and Inhibiting Factors of the 3R (Reduce, Reuse, and Recycle) Program

The external supporting factors of an effective 3R (Reduce, Reuse, and Recycle) program implemented through waste banks to empower the community economy in Gorontalo are the government, the cooperation with the waste bank owners in Gorontalo, and fixed market share to sell the waste product. Moreover, the inhibiting factors are community skepticism and reluctance. They consider waste banks insignificant and are unwilling to spare time to sell waste at waste banks.

DISCUSSION

1. Effectiveness of the 3R (Reduce, Reuse, and Recycle) Program Implemented through Waste Banks to Empower the Community Economy in Gorontalo

Referring to the interviews and observations, we present a summary of the effectiveness of the 3R (Reduce, Reuse, and Recycle) program implemented through waste banks to empower the community economy in Gorontalo (Table 1).

Table 1 Context Diagram of Focus 1

| No. | Context | Findings |
|-----|-----------------|--|
| 1 | Efficiency | The economic impacts are inefficient |
| | | The community save waste reluctantly |
| 2 | Adequacy | The policy target is clear |
| | | The social and environmental impacts are positive. |
| 3 | Equity | Customer registration is easy |
| | | Everyone can be a customer |
| 4 | Responsiveness | The service is available daily |
| | | The staff is responsive and friendly |
| 5 | Appropriateness | The program management is good |
| | | The staff supports the program and the government policy |

According to Table 1, the 3R (Reduce, Reuse, and Recycle) program implemented through waste banks to empower the community economy in Gorontalo is progressively developed, evidenced by waste reduction that achieves the target. However, the waste management system consisting of sorting, transferring, and processing waste is still poor. In terms of economic benefits, it cannot significantly contribute to the economic improvement of the surrounding community registered as waste bank customers.

Suryani (2014) argues that waste banks are useful for humans and the living environment in terms of cleaning the environment and raising the community’s awareness of the significance of hygiene and the economic value of waste. Besides, through waste banks, the community can earn more from the waste they sell. The money, that they can draw anytime, will be saved in their accounts. However, the rewards given to customers are not only in the form of money but also in gold. Similarly, customers can draw gold when needed.

3. Supporting and Inhibiting Factors of the 3R (Reduce, Reuse, and Recycle) Program Implemented through Waste Banks to Empower the Community Economy in Gorontalo

The waste management are supported and inhibited by various factors. According to the interviews and observations, we make Table 2 that lists the supporting and inhibiting factors of the 3R (Reduce, Reuse, and Recycle) program implemented through waste banks to empower the community economy in Gorontalo.

Table 2 Context Diagram of Focus 2

| No. | Aspect | Supporting | Inhibiting |
|-----|-----------------|---|---|
| 1 | Internal | a. Waste bank owners’ commitment b. Staff’s commitment | a. Staff’s incompetence b. Narrow area c. Inadequate facilities |
| 2 | External | a. The government’s supports | a. The community stigma b. Waste bank legitimization in the local regulation |

| | | |
|--|-----------------------------------|--|
| | b. Other waste banks in Gorontalo | |
|--|-----------------------------------|--|

Based on Table 2, the crucial internal factors are the waste bank owner’s commitment to socializing the program and the staff’s commitment to earning incentives. Meanwhile, the inhibiting factors are relatively narrow waste bank areas and the tools and facilities that insufficiently support the progress of the program that is the 3R-(Reduce, Reuse, and Recycle)-program-based waste management. The internal factors should thus be improved. Moreover, the external supporting factors are the government, the cooperation with the waste bank owners in Gorontalo, and fixed market share to sell the waste product. Moreover, the inhibiting factors are community skepticism and reluctance. They consider waste banks insignificant and are unwilling to spare time to sell waste at waste banks.

The 3R (Reduce, Reuse, and Recycle) program needs constant monitoring; especially in sorting waste by the community, transferring waste, and managing waste; so the waste management system can achieve the target. It is in line with Mahyudin (2014) that sustainability will not be sustainable without the community’s willingness and awareness. It is insisted that certain indicators i.e. the fulfillment of the community needs, the increase in the economic standards, and sustainable development are the logic of the increased amount of waste. When waste management is focused on some technical problems and environmental, economic, and social impacts, the main issue is in the paradigm in terms of waste management.

The community has known, as argued by Kamuli *et al.* (2016) that the enterprise made by Gorontalo government in the form of BLH in terms of waste management has gradually changed the community’s paradigm of how to manage waste using the 3R (Reduce, Reuse, and Recycle). Waste, considered unworthy, is now considered worthy.

CONCLUSION

According to the research findings and discussion, here are the research conclusions:

1. The 3R (Reduce, Reuse, and Recycle) program implemented through waste banks to empower the community economy in Gorontalo is progressively developed, evidenced by waste reduction that achieves the target. However, the waste management system consisting of sorting, transferring, and processing waste is still poor. In terms of economic benefits, it cannot significantly contribute to the economic improvement of the surrounding community registered as waste bank customers.
2. The crucial internal factors are the waste bank owner’s commitment to socializing the program and the staff’s commitment to earning incentives. Meanwhile, the inhibiting factors are relatively narrow waste bank area and the tools and facilities that insufficiently support the progress of the program that is the 3R-(Reduce, Reuse, and Recycle)-program-based waste management.
3. The external supporting factors are the government, the cooperation with the waste bank owners in Gorontalo, and fixed market share to sell the waste product. Moreover, the inhibiting factors are community skepticism and reluctance. They consider waste banks insignificant and are unwilling to spare time to sell waste at waste banks.

SUGGESTIONS

Based on the research findings and discussion, here are the research conclusions:

1. The 3R (Reduce, Reuse, and Recycle) program needs constant monitoring; especially in sorting waste by the community, transferring waste, and managing waste; so the waste management system can achieve the target.
2. The local government should give more supports, especially in the form of socialization, grants, or capital loan. Besides, the engagement with private parties through Corporate Social Responsibility (CSR) should be improved to develop waste banks.
3. Future researchers should make a further investigation of the problems i.e. other activities that can empower the community as there must be other activities that can empower the community besides waste banks.

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