

## WASTE BANK AND ECONOMIC IMPROVEMENT ON THE CITIZENS OF BANDA ISLAND

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### ABSTRACT

This study aims to determine the impact of waste management managed by the Banda Naira Banda Naira Mandiri (BNM) in Kampung Baru Village, Banda District, Central Maluku Regency. This research focuses attention on changes in people's behavior in responding to the existence of waste banks for increasing economic welfare and internalizing ecological awareness in the lives of the Banda people. Research uses qualitative methods with data collection techniques through questionnaires, interviews, observation, and documentation. Data were analyzed using the processes of data collection, data reduction, data display, and drawing conclusions. The results showed that the pattern of waste bank management driven by BNM and carried out in schools and inter-island villages has increased awareness of the dangers of waste that is not properly processed. People are becoming more concerned with utilizing waste rather than disposing of it. Through the 3R principles, community empowerment efforts in the context of waste have been quite successful and have had a positive impact on ecological education, increased economic welfare, and creativity for the people of Banda Naira. However, it is realized that there is still limited knowledge, especially in the management of plastic waste, and several problems with the price of waste, which is claimed to be too cheap. This research recommends conducting further studies on exploratory research in order to obtain a formulation of a coastal community-based waste management model.

### KEYWORDS

Waste Bank, Economic Improvement, Waste Education, Banda Island

### INTRODUCTION

Waste management is part of cleanliness management. Cleanliness also has an aesthetic meaning. Because there are three things that are the main concern that must be considered in waste management: identification of the condition of the existing waste management system; definition of good and right in terms of waste management; and patterns of coaching and development policies. Good and correct waste management includes all activities carried out, from handling the appearance of waste to how to handle final disposal. Broadly speaking, waste management activities include control of waste generation, waste collection, transportation, processing, and final disposal (Sejati, 2004).

Handling waste problems is not easy but very complex because it includes technical, economic, and socio-political aspects. Referring to the definition of DPU Cipta Karya (1993), waste management is an attempt to regulate or manage waste from the processes of container, collection, transfer, transportation, processing, and final disposal (see DPU Cipta Karya, 1993). The waste management system thus includes five

interrelated aspects, namely: institutional aspects, financing, regulation, community participation, and operational techniques.

In the waste management discourse, the term "waste bank" appears. According to Aryenti (2011), a waste bank is a place to store waste that has been sorted according to type. The way the Waste bank works in general is almost the same as other banks: there are customers, bookkeeping, and management. In a commercial bank, what is deposited by the customer is money, but in a waste bank, what is deposited is waste that has economic value (Aryenti, 2011).

A good waste bank is managed by people who are creative and innovative and have an entrepreneurial spirit, so they can generate income for the community. The Waste bank work system is carried out on a household basis by giving rewards to those who successfully sort and deposit a certain amount of waste.

The concept of a waste bank actually adopts bank management in general. In addition to being able to use various means to carry out the greening movement, waste management can also be a means of educating the public about saving money for the community and children. The waste bank method also functions to empower people to care about cleanliness.

Environmental awareness (*ecological awareness*) is an important solution to today's world problems. According to UNESCO's definition, ecological education or love for the environment is a process of helping students develop awareness and concern for protecting the environment that is realized both personally and collectively. Educational institutions need to be involved in efforts to help students become moral individuals who can be responsible for the fate of His creation (Sumarah, 2019: 42). Soykan (2012) also defines ecological education as a process to help students have awareness and concern for protecting the environment, which is realized both personally and collectively (Soykan, 2012: 737).

Awareness not to dispose of waste carelessly, to sort waste properly, not to waste food, and to reduce the use of plastic waste has been taught by parents and teachers at schools through the learning process. Ecological education has now become the focus of attention in schools, awakening their students through character education so that they are increasingly concerned about the environment. Ecological education can also be referred to as empowering education to help students take responsibility for their lives and build a new awareness of caring for the environment. Ecological education from an early age is carried out through activities that are beneficial to the development of the character of students so that they become more stable in their personalities and respect each other and the environment around them (Sastrapratedja, 2013: 14).

Some of the results of previous studies, such as those conducted by Alfiano Arif Muhammad in 2015, entitled "Community Empowerment Through Waste banks at Perum Gumuk Indah, Sidoarum Village, Godeam District, Sleman, Yogyakarta", found that education about waste issues is something of value and needed through a training program to recycle waste into handicrafts. From this training, it can build public awareness about managing waste and, at the same time, empower a productive

economy from recycled waste, which can be made into handicrafts that have economic value.

Likewise, research by Jean Anggraini entitled "The Impact of the Waste bank on Community Welfare and the Environment (a case study of the Cempaka II Waste bank in Pondok Petir RW: 09) Bojongsari Village, Depok City") found that the impact felt by the community from the existence of waste management through the Waste bank was very positive in helping to pay for their children's education, even though the results were also not very large. Another impact is the state of the environment, which should be more aesthetic, clean, and healthy.

## RESEARCH METHODS

This article is based on the results of qualitative descriptive research. According to David Williams (1995), as quoted by Maleong (2007: 5), qualitative research is collecting data in a natural setting, using natural methods, and carried out by people and researchers who are naturally interested. The research was conducted in Kampung Baru Village, Banda Naira District.



**Figure 1. Location Map of the Trash Bank's Existence (Source: Google Maps)**

This study employs qualitatively focused research; in this case, the researcher will select informants who are thought to be reliable and comprehend the purpose of the topic being studied (Sutopo, 1988:24). The interview was conducted with the aim of obtaining direct information from several actors, activists, and the community involved in the waste problem in Banda Naira. The purpose of the interview is to find out what is contained in the minds and hearts of other people and how they view the world, namely, things that we cannot know through observation (Nasution, 1996). The research subjects are those

who are directly involved in the waste bank management process and/or those who have a complete understanding of waste management in Banda Naira, namely, Mr. Magafira Ali, chairman of the Cahaya Samudera Indonesia Foundation, who is also an environmental activist; Mr. Darwin Harun, field operations; and Mr. Arjuna Samen, sea operations. Interviews were also conducted with several school students and members of the Banda community regarding the existence of the waste bank.

The data analysis technique uses source criticism, which aims to reveal an event chronologically with the aim of theory-based analysis. This method is used because the data needed as a source comes from past events. In addition, interpretive analysis, which connects data and facts that are arranged with each other so that a harmonious whole is obtained, where one event is included in the overall context of other events or events covering it, Ismaun (1992).

## **RESULTS AND DISCUSSION**

The Waste bank Bank was first established in Banda Naira in 2019, at RT. 02 Kampung Baru Village, Central Maluku Regency, Maluku, Indonesia, with the name "Banda Naira Mandiri," or abbreviated as BNM, which was initiated by the Luminocean Foundation, a foundation domiciled in Bali. Given the need for environmental education in Banda Naira, a new non-profit organization similar to Luminocean was established, namely Cahaya Samudera Indonesia (CSI), which is actually a literal translation of Luminocean in Indonesian. As the name suggests, Cahaya Samudera Indonesia (CSI) is to bring brightness and light to the sea and its future.

The purpose of the existence of the CSI institution is to provide environmental education services for children and youth living on the islands in Banda. By educating about the impact of human behavior on the environment and by teaching about the alternatives that everyone can choose to live a more environmentally friendly and sustainable lifestyle, CSI hopes to contribute to the conservation of sensitive ecosystems, such as coral reefs. Meeting these goals is approached by teaching about waste reduction, segregation, and recycling; about the role of coral reefs for the ecological balance in the sea and for providing oxygen to our atmosphere; about using solar energy as an alternative to diesel generators; about how and why to build a waste water park; and many more. Cahaya Samudera Indonesia also aims to inspire children and youth to read books, open their minds, think critically, and understand that each of us can make a difference.

According to Magafira Ali, the initial idea of establishing a waste bank bank in Banda Naira emerged in 2017. At that time, Banda Naira was faced with an acute waste problem: waste scattered on the streets, made in the ocean, clogged in the gutters—all irregular because there is no adequate system for waste treatment. Even though there is a final disposal site or Tempat Pembuangan Akhir (TPA), in the city of Naira (the capital of Banda Subdistrict), the landfill has become a problem. So a waste bank bank was built with the aim of making people aware that waste can also bring benefits and even have economic value. Magafira then came to residents' homes to pick up trash; some even bought it from residents' homes. The idea of this waste bank then received a positive response from the government of the Central Maluku Environment Agency, which is building a waste bank bank.



**Figure 2. Waste Bank Building**

In 2019, a recycling building was built, which was a donation from the large company Tirta Foundation PT. Aqua Danone by Mrs. Tirta and Luminocean and sponsored by BandaSEA from Germany. Since then, the activities of the waste bank have become more widespread, namely collecting waste in all other villages and islands in Banda Naira. Banda is a very remote island; it consists of several clusters of small and distant islands and is very difficult to reach.



**Figure 3. Recycling building**

The waste bank system is carried out in the same way as a bank system in general, namely that waste is collected at a waste bank collection site, after which there is a fleet of ships or waste recycling ships ready to transport waste bank when the waste has been collected. The name of the ship is "TIRTA INTAN". The ship picks up on these islands and gives money to customer savings or those included in the BNM category of the Banda Naira Banda Naira Mandiri Bank. So the waste is counted, weighed, then processed for recycling and sent back to a plastic company in Surabaya.

Since April 2021, the activity of collecting plastic waste from all over the Banda Islands has been assisted by a ship funded by a grant from the Tirta Utomo Foundation (Jakarta,



Indonesia) and BandaSEA (Bonn, Germany). Activities also include training in all villages on how to sort plastic and prepare collected plastic for further processing at our recycling facilities or shipment to Surabaya.

Together with German partner BandaSEA e.V., the waste bank collection activity has carried out a number of positive activities aimed at creating a waste-free sea and Banda island, becoming an environmental education center for children on Banda Island, and even co-funding the first "green school" in Banda that is free of single-use plastics. At that school, children learn a responsible way of handling and reducing plastic waste.



**Figure 4. The process of collecting waste for recycling**

#### **Working Mechanism of the Banda Naira Banda Naira Mandiri Bank (BNM)**

The implementation of the waste bank has a mechanism in its operations. The working system of the BNM waste bank for saving waste has procedures and stages. The following is the operational mechanism of the BNM waste bank according to the BNM pilot waste bank savings book (BNM Waste Bank Profile Book, 2019):

1. The waste bank accepts customers for organic waste in each resident's house for those who want to participate in saving in the savings book of the BNM waste bank.
2. Every customer who saves in a waste bank will be given an account book or savings book.
3. Inorganic waste that has been sorted by the customer will be weighed by the waste bank officer. For inorganic waste, the method of collection is being collected by a bank officer to be brought free of charge for waste transportation services.
4. The type and weight of the scales will be recorded in the memorandum and the officer's notebook as incoming goods as well as the nominal amount of rupiah savings. For the nominal waste purchased, the waste bank sets a price for the community to sort waste and categorize it into each type. The price of the item is:
  - a. Goods that have been weighed and recorded will then be transported and brought directly to the recycling building (recycling place).
  - b. Customers can take their savings every time they want to save at the BNM waste bank. Also, customers can withdraw money on the 15th of each month by writing down the minimum limit for money in savings, with or without closing the account.

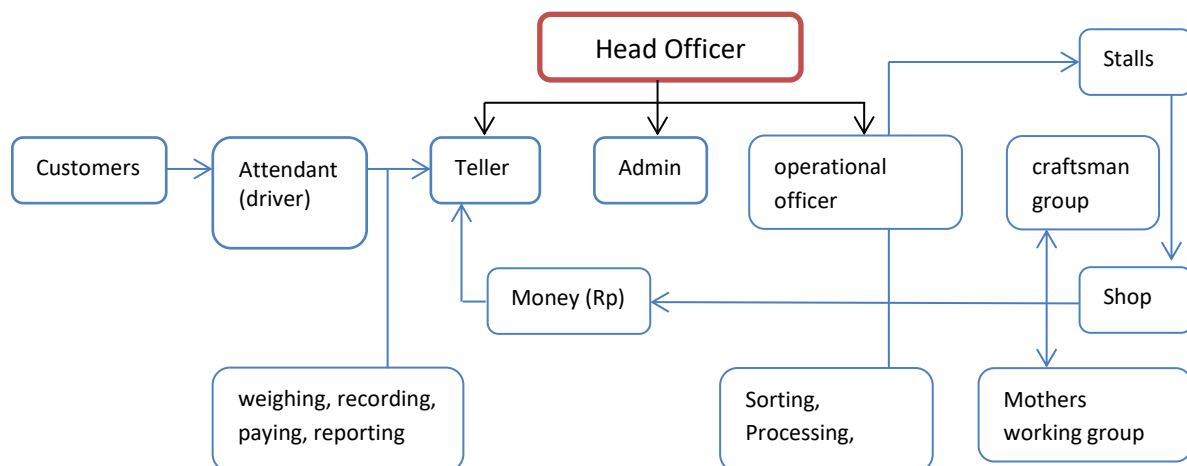


**Figure 5. BNM Waste bank Bank Savings Book**

The process of saving in a waste bank begins with sorting the waste by the customer himself, namely by separating organic waste according to type and code. Each customer is given a savings book for those who want to save at the BNM waste bank. Officers weigh and record the amount of waste that has been sorted by customers based on the weight of the waste. Waste bank that has been weighed will be transported by officers directly to the building where plastic is recycled.

The price of waste in the BNM waste bank has been determined based on an agreement with the pelapak and the waste bank so that the price obtained by both parties is mutually beneficial. The proceeds from selling the waste from Pelapak will later be included as customer money, and the customer himself can withdraw his savings every 1st of the month.

The BNM waste bank has only one management operational standard, namely the operational standard for inorganic waste (plastic waste). The following is a standard operational picture of the BNM Waste bank Bank:



**Figure 1. Operational Standards of the BNM Waste bank (Plastic Waste)**

### **The Role of Waste banks and Increasing Economic Improvement**

Inorganic (plastic) waste owned by both customers and all villages is collected by waste bank officers (cars). However, there are also customers who bring their own inorganic waste to the waste bank due to the proximity of the waste bank or temporary storage house. After the garbage is transported by the officer and handed over to the waste bank, the teller then reports to the chairman to weigh the incoming garbage, record it, and pay money to the customer for the garbage purchased. The admin here has the role of recording all transaction activities in the waste bank book. Then the operational department will sort out the waste that will be reused or recycled (such as bags, wallets, baskets, dolls, tissue boxes, and so on).

Furthermore, the results of recycling will be deposited in the store to be resold to consumers or tourists from outside the area. Even the results from the handicrafts of PKK mothers who have recycled inorganic (plastic) waste have been partially sent to shops in The shop for Mrs. Marieke and Mr. Tuta is in Germany. Apart from that, the plastic that is chopped or said to have passed the appropriate type of waste sorting at the recycling building is sent back to the plastic company in Surabaya by Mrs. Wildayanti, who always receives all the plastic waste in Banda Naira.

Items that can be recycled are processed at the hands of craftsmen or PKK mothers who have been fostered by the BNM waste bank. The craftsmen make various kinds of inorganic waste. The following types of BNM waste products:



**Figure 6. Craftsmen's Handicrafts**

Apart from being a handicraft product, plastic is also recycled into ready-to-use fuel, including gasoline, kerosene, and diesel fuel. The fuel products from these plastics have been tested on existing equipment in recycling buildings (recycling sites), such as gasoline or premium, which is already used in motorbikes and tosa, kerosene, which is already used in stoves, and diesel, which is already used in plastic chopping machines. For the results that have been tested daily, all of them are not for resale but are used as daily necessities.





**Figure 7. Pyrolysis Machine for Processing Plastics into Fuel with Capacity of 10 and 50 kg**

BNM has also set up an environmental education center for children on Hatta Island. This non-profit project contributes to the future of marine conservation in the Banda Islands. They also funded the first green school in Banda, which is free of single-use plastics. Here, children learn how to be responsible when handling and reducing plastic waste.



**Figure 8. Green School**

The process of internalizing the values of waste awareness instilled from an early age is carried out through two socialization models, namely, primary socialization and secondary socialization. In the primary socialization of the waste bank, both staff and customers teach the value of the meaning of waste to the community and to villages. Secondary socialization by the waste bank was also carried out in schools around Neira Island and Seberang Island by providing knowledge about waste sorting and management.

## CONCLUSION

The Waste bank managed by Banda Naira Mandiri has benefited the people of Banda and their environment through various activities, such as outreach about a cleaner environment, making people aware of the importance of waste management, and turning waste into an economic good. The benefits of the waste bank have added to the income of the Bandanese people because when they exchange their waste, they will receive a reward in the form of money collected in an account and in the form of nine staple foods.

Conditions in Banda Naira are currently far better and relatively easier to deal with waste, although we are aware of the existing limitations and inaccessibility. With the existence of the BNM Waste bank, it has been able to deal with waste, especially plastic waste. Several problems, such as the price of waste, which is often claimed to be too cheap, have motivated and educated residents that this waste can be utilized and have also saved the environment around them. Of course, there are still many Banda residents who do not understand the problem of waste, especially plastic waste.

Garbage is now starting to be seen as an item that has economic value because it can be sold and also has a use value because, with good processing, waste can be recycled to be reused by the people of Banda Naira.

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