

## The Role Of Waste Banks In Empowering Plastic Waste Into Economically Valuable Upcycled Handicraft Products (A Study On Waste Bank Wares)

Yustina Denik Risyanti<sup>1</sup>, Aurilia Triani Aryaningtyas<sup>2</sup>, Phia Susanti Helyanan<sup>3</sup>

<sup>1-3</sup> Indonesian College of Tourism Economics, Semarang, Indonesia

Corresponding email: [denikrisyanti3@gmail.com](mailto:denikrisyanti3@gmail.com)

**Abstract.** Sustainable waste management needs serious attention, starting from the concern about people's habits of carelessly disposing of household waste, leading to a dirty and slum environment. If this problem is not addressed, it will become a serious problem that will certainly disrupt people's lives. Facing this situation, the community proactively formed a task force to creatively deal with waste, starting from the utilization of plastic waste that accumulated in the community. This research aims to find out the implementation of plastic waste management with recycling techniques in Bank Sampah Wares, located at Widosari No. 21, RT 03, RW 04 Tegalrejo, Salatiga. This study used a qualitative field research approach with data collection techniques through observation, interviews, and literature studies to explore data and understand waste disposal stakeholders, and their participation to help solve waste problems. The results showed that along with the development of science and technology, the Bank Sampah Wares community implemented a plastic waste processing process using recycling techniques by developing plastic waste into unique and modern handmade products. The handmade product can then be utilized to increase economic value. Besides that, the waste processing site can also be used as a place to foster creativity without requiring high costs by utilizing processed plastic into creative products. This research should be conducted to show that waste bank goods have a strategic role in educating changes in the behavior of residents of the environment in utilizing of waste.

**Keywords:** Handicrafts; Plastic Waste Processing; Upcycle Products; Economic Value

### INTRODUCTION

Plastic waste has always been a major problem for environmental pollution, this problem is due to its characteristics that are not easily decomposed naturally and need to be aware that its processing produces toxins. The price of plastic is affordable and easy to find so that plastic facilities provide convenience as a place for packaging food and other goods. Plastic brings many benefits to various needs in accordance with the times as in reality that currently to fulfill human life cannot be separated from plastic facilities. The era of plastic has become all practical, but behind that comes the concern about the threat of the impact of plastic waste traps on the natural environment. A previous research explained that the problem of plastic waste is a consequence of modernity through packaging. The emphasis on capitalism and industrialization emphasizes the importance underlying modernity. Most of the packaging is made of plastic. Packaging from plastic is easy to shape, lightweight, waterproof, and cheap so it's the most efficient and rational packaging choice. (Alfitri et al. 2020)

Public awareness of waste management in Salatiga City still needs to be addressed optimally. Waste production continues to increase in line with changes in consumption and lifestyle of the community, which will increase the generation of various waste. Until now,

some people think that waste is a useless item that should be thrown away. Based on data from the Department of Environment (DLH), the amount of waste that goes to landfills is 30,550 tons and only about 17% of the potential waste can be reduced by waste banks and communities from waste sorting activities. (Dinas Lingkungan Hidup Kota Salatiga 2020)

In response to these conditions, the city government continues to socialize wastefriendly campaigns, to make this happen, the participation of various parties cannot be separated. Public concern is very important in supporting government programs by mobilizing a waste awareness movement, so that waste management both organic and inorganic is useful. Various efforts have been made by the local city government to overcome the waste problem. A report about the activities coinciding with the commemoration of the National Waste Care Day (HPSN) 2023, the Salatiga City government launched the Main Waste Bank and a series of other activities including: sorting waste, making eco enzyme, collecting day electronic waste aims to make waste management can be done comprehensively and integrated so that it provides benefits to the community environment. (Saritri 2023)

The effort to support government programs, community participation is always encouraged through waste bank communities, one of which is the Wares waste bank in Tegalorejo. The concept of waste management is similar to the banking system, but the waste is deposited, while the people who save the waste are called customers. The activities carried out to overcome the increase in waste include recycling plastic waste to be used as handicraft products. According to Nurikah, it is explained that waste banks are social design activities that teach people how to sort waste and increase public awareness of smart waste management and further reduce waste sent to (TPA) (Nurikah and Fuqron 2022).

Referring to several studies conducted previously with qualitative methods of field research: research results from (Ningrum and Istiqomah 2020) that waste banks play a role in empowering the surrounding community with waste recycling activities into economically valuable handicrafts (1), while the results of the study (Gunartin, Mulyanto, and Sunarsi 2020), show that waste banks have a role to play in empowering the surrounding community, that the pattern of waste bank management is to increase awareness of the dangers of waste that is not properly processed, so that people are currently more concerned with utilizing waste than disposing of it (2), supported by the results of research (Rosida et al. 2023), that the existence of waste banks is an alternative solution to encourage a culture of waste management, as an effort to create a clean environment, employment as a side job for residents to increase income, in addition to fostering the creativity of residents in developing works from plastic waste materials (3). The three results of previous studies are relevant to support researchers to study

the role of the Wares waste bank in managing plastic waste recycling which is useful in handling waste problems and increasing economic value.

Compared to previous research, this study emphasized the development of handicraft creativity from upcycling plastic waste. on the basis of this background, it became an impetus for the researcher to develop a study with the aim of knowing the implementation of plastic waste management with upcycling techniques at Wares Waste Bank, Salatiga.

## **METHOD**

This study used a qualitative method of field research with the title “The Role of Waste Banks in Empowering Plastic Waste Into Economically Valuable Upcycled Handicraft Products (A Study on Waste Bank Wares)”. Data collection techniques through observation, interviews and literature studies to explore in-depth data from sources by involving key informants of waste bank actors who understand the conditions of the field. This is very helpful for researchers in uncovering plastic waste processing activities and citizen involvement in dealing with waste problems. Based on field studies, it shows that Wares Waste Bank has a role in processing plastic waste using upcycling techniques by processing plastic waste into unique, innovative and contemporary handicraft products. The data analysis technique used is interactive for processing data that has been obtained in the field with the stages of condensation, data presentation, and conclusion drawing. Furthermore, to check the validity of the data in the research is done by triangulation, namely cross checking data using different sources and methods, this is done to obtain accurate data.

## **RESULTS AND DISCUSSION**

### **1. The role of Wares Waste Bank in Waste Management**

Wares Bank Waste (Waras Resik) is one of the waste management communities that continues to support overcoming waste problems. Established on April 17, 2014 with the Head of Village Decree No. 658.1/67.1/ Year 2014. Located at Jl. Widosari No.21, RT 03, Rw 04 Tegalrejo. The formation of the community consists of women’s family welfare empowerment group (PKK) and all members of RT 03, RW 04 Tegalrejo, Salatiga. Based on the concern of seeing the habit of littering and a lot of scattered waste material, especially the source of waste from households, causes a large amount of waste generation. If this condition is not addressed, it will pollute the environment and will endanger the health of residents.

As explained by the management, the formation of the Wares waste bank community is very helpful in directing residents to the importance of waste management. The purpose of

forming this waste awareness group is to familiarize residents not to litter, and motivate residents to get used to sorting waste so that waste can be used as additional income. Currently, residents' awareness has been felt with waste management such as sorting waste, processing waste, and transporting waste in landfills.

According to the management of the Wares Waste Bank, it is like banking with a savings system, but is not money rather it is waste, that starting from the household scale, both organic and non-organic waste. In accordance with the work program carried out, namely applying the concept in waste management and environmental preservation 3R (Reduce, Reuse, Recycle). The waste bank calculates the value of the waste collected and puts it into a savings account with the work process includes sorting waste, delivering it to the waste bank, weighing the waste, recording deposited waste, recording the results of waste deposits, dividing the customer's result to waste bank. The sales proceeds are kept according to the amount of waste deposited. Here are some price lists of waste materials that were successfully inputted by researchers:

**Table 1.** Purchase Prices for Waste Materials

No	Types of plastic wastes	Price / kg
1	recycling	IDR 50
2	Slippers	IDR 85
3	Bagor K	IDR 100
4	Bagor B	IDR 120
5	Kresek	IDR 200
6	Raincoat	IDR 300
7	White plastic	IDR 600
8	Bare color	IDR 1,000
9	Plastic bottles	IDR 1,500
10	White Bucket	IDR 2,500
11	Drinking Straws	IDR 200
12	Plastic cups	IDR 2,200

Source: Wares Waste Bank, 2023

Facilities and infrastructure in waste management are crucial needs as basic facilities that can support activities to deal with waste problems. Realizing this need, Wares waste bank strives for facilities by self-funding local residents and from sponsors. The following is a list of inventory owned by Wares Waste Bank:

**Table 2.** infrastructures for the bank Sampah Wares

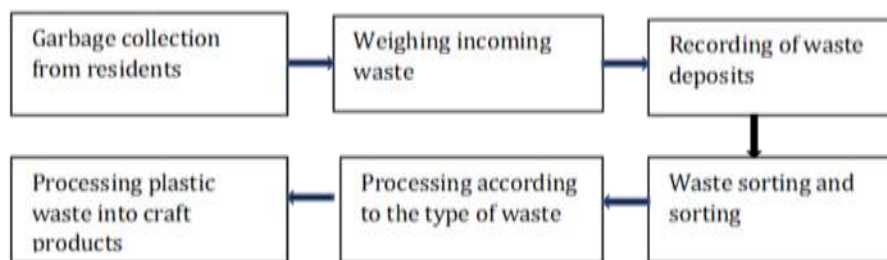
No	Description	Quantity	Quality
1	Building	1	good
2	Warehouse	1	good
3	Display space	1	good
4	Computer	1	good
5	Coffee table	1	good
6	Workbench	1	good
7	Shelf display	2	good

8	Cupboard	1	good
9	Craft making equipment	4	good
10	Scales	1	good
11	Bag	1	good
12	Saving book	2	good
13	Closed bucket (garbage container)	4	good

Source: Wares Bank Waste, 2023

Community empowerment in dealing with waste problems through the Waste Bank is a strategic effort to involve the participation and responsibility of all parties to environmental concerns to be free from pollution and pollution. According to (Khairiyati et al. 2021) waste is useless, unused, or wasted material as the residue of a process. The negative impact of poor waste management will threaten the sustainability of human life. In response to this condition, the Salatiga City government continues to promote community involvement in waste management, specially through waste banks.

There are currently 46 waste banks in Salatiga. This community-based management approach aims to manage waste from households as early as possible, so that not all waste goes to landfill. (Kundori 2018)



**Figure 1.** operational standards of the Wares Waste Bank

Referring to the opinion from (Haryanti, Gravitiani, and Wijaya 2020) explained that a waste bank is a place to sort and collect waste that can be recycled and has economic value. Besides that, it carries out innovative activities that educate the public in wise waste management. Furthermore, (Gunartin et al. 2020), waste banks have a contributing role in reducing waste piles and changing the value of waste, as well as providing community education benefits in processing waste. Likewise, providing insight into waste as waste material can be used as an additional source of community income. Further explained (Asteria and Heruman 2016) that waste banks educate the public to sort waste, raise public awareness in processing waste wisely to reduce the burden of waste entering the landfill.

## 2. Upcycling Plastic Waste Products with Economic Value

Based on the survey, Wares Waste Bank continues to encourage and motivate the local people to carry out waste management in various ways according to waste management. One of

its flagships is the transformation of plastic waste by upcycling techniques into handicraft products. This activity is an alternative to address the problem of plastic waste that is not just being thrown away but has multiple uses as a way of improving the creative economy. Recycling innovation is the utilization of waste without eliminating its original form in its application, the concept of upcycle has functional and aesthetic value.

Based on studies in the field, waste has become a crucial problem, based on data that waste from plastic bags is very high. Plastic waste for the environment is very difficult to decompose through the soil, it can take hundreds of years. Referring to the opinion (Khairiyati et al. 2021) plastic waste is a used or unused products made from chemicals. There are two types of plastic, namely thermoplastic plastic (its characteristics can be modified or processed to another type). The second is thermoset (this type if it has hardened cannot be softened again). The alarming condition is that plastic waste will pollute the environment and its accumulation can have an impact on health problems. Referring to data from the World Economic Forum (2020) that 70% of plastic waste is said to be mismanaged (Susanto 2020). The following are data on plastic management, among others:

**Table 3.** plastic management data

No	Description	Prosentase
1	Sampah plastic Indonesia sekitar 4,8 juta ton pertahun dapat dikatakan salah kelola	70 %
2	Sampah plastic dibakar secara terbuka	48 %
3	Dibuang di tempat penimbunan resmi namun tidak dikelola dengan baik	13 %
4	Bocor ke saluran air dan laut (sekitar 620.000 ton sampah plastic)	9 %

Source: World Economi Forum

**Table 4.** Percentage composition of waste in Salatiga City

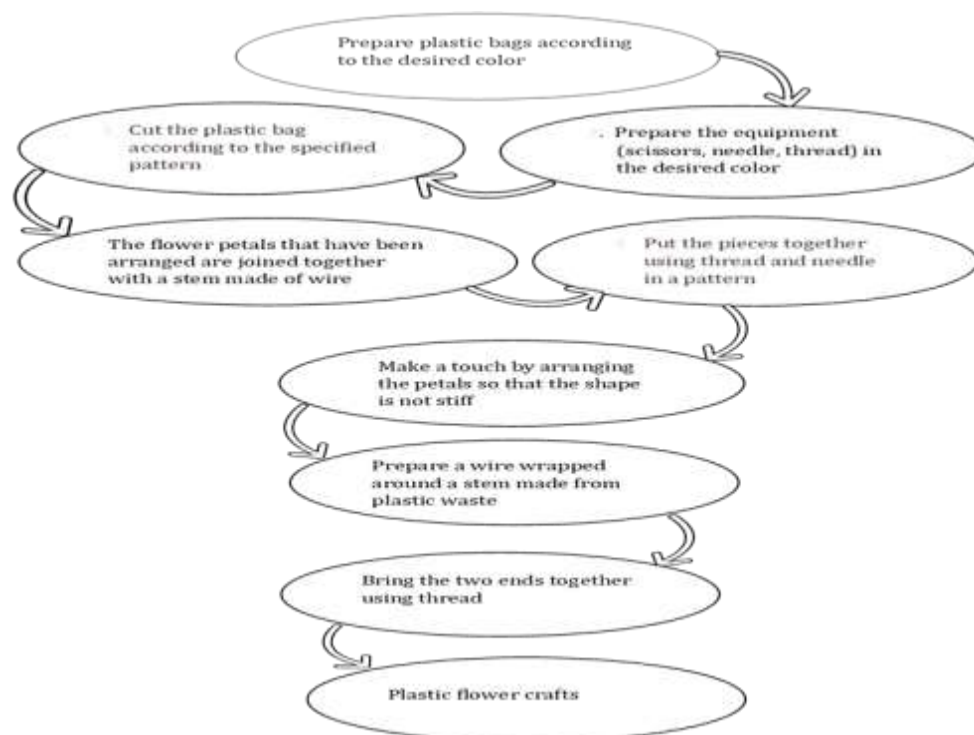
Waste Composition	Amount
Paper	20.68
Cloth	4.16
Plastic	5.1
Metal	9.3
Glass	7.02
Organic	50
Battery	2.6
Etc	1.14

Source: Environmental Service

The Wares Waste Bank activity development program continues to be carried out in line with the vision of increasing community involvement in maintaining cleanliness and concern for environmental preservation, as well as the mission of integrating waste into the management of creative and independent human resources. In connection with this, many creative ideas are carried out in collaboration with the management, members, and residents in

processing waste, one of which is utilizing plastic waste by recycling "upcycle". The creation of recycled plastic waste is an interesting business opportunity to make handicrafts such as: bags, lanterns, decorative lamps, flowers, baskets, key chains and other crafts.

One of the flagship products of Wares waste bank is the creation of waste processing handicrafts making flowers from plastic bags that have selling value as attractive works. This upcycle product is increasingly in demand because it looks attractive and is not inferior to real flowers. Alternatives to plastic flowers are cheaper and more durable than real flowers. Plastic flower crafts are also no less interesting if assembled, although the necessary materials are cheap but flower arrangements from plastic waste have aesthetic value and promising profits. Here is one of the stages in making plastic flower arrangements:



**Figure 2.** Operational Standard of the Wares Waste Bank

In relation to waste management issues, the community can play an active role in overcoming waste problems from the start. (Yudiyanto, Yudistira, and Tania 2019) stated that upstream waste management can actually be done by the community themselves by classifying waste according to its type. This classification is done as in dry waste, wet waste, plastic, or bottles. Likewise, with waste management involving the community, the role of waste banks is very helpful in overcoming waste problems. This can be observed from the upcycling of plastic waste into handicraft products at Wares Waste Bank with a variety of creativity according to market demand. Launching the explanation (Arimbawa, Artayani, and Mahadi 2021) that activities in crafts are also an expression and creativity of crafters to create

innovative skills, therefore the concept of skills is often close to the field of art called artistic skills.

Further (Santoso and Widyamurti 2018) Upcycling is a method of processing waste or useless materials into new materials that are more valuable and have economic value. In the process of making it is not so complicated but creativity is needed to fulfill the usefulness of recycled goods. Here are the stages in making upcycle handicrafts made from plastic:



**Figure 3** Steps of making plastic waste crafts

Plastic waste craft is one of the upcycling activities that can provide ideas for developing creativity without the need for complicated equipment and cheap materials, but this product can be a business opportunity in the creative economy sector. Creativity is a factor that encourages innovation through the utilization of existing inventions. Innovation is the transformation or implementation of ideas or thoughts based on creativity by using existing inventions to produce useful and quality products or processes (Ministry of Tourism and Creative Industries, 2014). (Ministry of Tourism and Creative Industries, 2014).

As explained (Sartika et al. 2022) that the creative economy has contributed to economic growth in recent years and is becoming an increasingly important industry. Furthermore (Purnomo 2016) that the creative economy is a concept to realize sustainable economic development based on creativity. Not only renewable energy but also utilizing the resources of ideas, thoughts, talents, and creativity.

### **3. Empowerment of Wares Waste Bank**

Wares waste bank empowers various parties to work together as part of the waste management chain in terms of utilizing craft business opportunities by depositing consumable materials from plastic waste such as: beverage stalls, scavengers, cafes, restaurants, in plastic





waste management. This cooperation has been running both involving local residents and other residents. It can be said that this cooperation can benefit each other in the utilization of valuable plastic waste. This effort continues with a variety of creative works made from unique plastic waste. This is a manifestation that Wares Waste Bank still exists consistently in plastic waste management with various products that are already on the market.






Wares Waste Bank deserves to be an inspiration for other waste bank players and waste care activists. Based on the results of data input in the field, Wares Waste Bank is often invited to provide training or education about waste management in schools, PKK groups, and other communities. In addition, Wares Waste Bank openly provides opportunities for people who will visit and practice in the gallery. The works of waste creativity, including those made from plastic, are displayed in the display room as well as a marketing tool to be sold to consumers in need. As for the collection of waste, both unsorted and sorted, it is accommodated in a warehouse provided by residents

Wares Waste Bank provides a gallery to display and market the products of waste processing creativity. Launching the explanation (Diharto 2022), that creativity represents a person's way of thinking in solving problems starting with the way of thinking and finding ideas. It may be a simple idea but it is effective in solving problems. For these works, the Salatiga City government has trusted this organization to participate in micro, small and medium enterprise (MSME) exhibitions as well as to educate people who need it.

A variety of creative waste products are displayed in the room, including plastic flower arrangements, fruit baskets, tissue holders, replicas, lanterns, bags and other modified waste products. These products have penetrated the market, sold to those who need it, and consumers can also order according to the desired model. In line with the development of the institution, waste management handicrafts can be used as an alternative business opportunity that brings profit to its members. Some examples of creative products from Bank Sampah Wares include flower arrangements and other craft creations:

**Table 5.** Upcycle Hanmade Products from Plastic Waste  
Wares Waste Bank

No	Results of Processed Products	Specification	No	Results of Processed Products	Specification
1		Lantern decoration	5		Bags and wallets

2		Food basket	6		Replica
3		Decorative lights	7		Flower arrangements
4		Flower arrangements			

Sources : Wares Waste Bank, 2023

In collaboration with the city government and the Department of Environment as well as universities. Bank Sampah Wares conducts excellent programs including: training activities, education to the community, visits to other waste banks. Due to the perseverance and consistency in pursuing waste management, Bank Sampah Wares has become a destination for visits or comparative studies both from the surrounding city of Salatiga and outside the region to gain experience in waste management. As a means of promoting its waste management products, the bank has participated in several exhibitions, and the proceeds from these exhibitions can be used to increase its income.

**Table 6.** Wares Waste Bank Work Program 2023

No	Work program	Target	Implementation
1	Outreach to community members regarding the development of waste banks	Members and citizens	January, July
2	Re-registration of waste bank members	Members and citizens	January
3	Waste savings service from residents	Member	January – December
4	Waste management (sorting, processing, processing, product manufacturing)	Member	January – December
5	Product Distribution	Partner institutions, citizens	January – December
6	Featured product exhibition	Members, community, institutional partners	Tentative
7	Competency improvement training	Member	March, September
8	Performance reporting	Manager	December

Sources: Wares Waste Bank, 2023

Likewise, the activities carried out at Wares Waste Bank need to continue to improve innovative products with selling value in realizing a creative economy for members. Therefore, in order to strive for product quality, there are several programs developed including: 1)

working with partner institutions both the city government and related agencies (Environmental Agency and Trade Agency) continue to strive for commitment to waste management with counseling, 2) Participate in various trainings to upgrade the novelty such as handicraft creations, waste processing innovations in accordance with the demands of the times; 3) Increase networking and cooperation with various stakeholders both with community members, cross-community waste banks, partner institutions, and the government.



**Figure 4.** Forms of Reward and Collaboration with Institution Partners

## CONCLUSION

On the basis of research in the field, it can be concluded that waste is an issue that needs to be handled seriously by various parties. The role of the community is needed to be involved as agents of change by increasing the importance of wise waste management. Through waste banks as a strategy to increase public awareness in order to be friendly with waste in addition to obtaining economic benefits. Such is the case with the activities carried out by the Wares Waste Bank, one of which is in processing plastic waste into unique handicraft upcycle products. Together with the community, this waste bank in Salatiga city is working on superior products including processing plastic waste materials as upcycled products that have a selling value. Therefore, its sustainable development needs support from the local government, related agencies and partner institutions.

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