

## Research Article

# Community-Based Waste Management for Village Environmental Sustainability in Urban Semarang

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Before the COVID-19 pandemic, residents of Mayangsari Village actively worked to improve environmental quality, particularly by addressing waste management issues. These efforts also supported the development of river-based tourism, a newly introduced initiative in the area. This study analyzes how community-based waste management contributes to enhancing environmental quality in Mayangsari Village. Data were collected through in-depth interviews, observations, and documentation involving residents of Kampung Mayangsari, Kalipancur Village, in Semarang City. Using a qualitative descriptive analysis, the study showed that initial public awareness of proper waste disposal was low. Many residents disposed of garbage directly into the river, and waste was managed individually using outdated, informal methods. However, as environmental initiatives led by the village government took hold, especially those linked to optimizing the river for tourism, community awareness began to grow. Community-based waste management is well-developed through the education process carried out by the Rukun Warga (RT) and Rukun Tetangga (RT) institutions and several local social groups. Key steps included providing trash bins for each household, establishing waste disposal regulations and sanctions, and introducing waste sorting and recycling. These efforts have not only improved cleanliness but also turned recycling materials into valuable goods.

**Keywords:** environment, sustainability, community, waste management, village

## 1. Introduction

Today, waste has become a global issue. Even developed, developing, and poor countries experience the same problems regarding waste management. The existence of waste is increasing because it is driven by the increasing number of industrial, tourism and household activities. For example, industrial waste has contributed to the decline in water quality and damage to ecosystems both rivers and seas (1) (2). Household waste, both liquid and solid, that are discharged into rivers are also the cause of polluted river water in urban areas (3). The increase in the quality and quantity of waste has led to environmental degradation (4).

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In general, waste can be defined as substances, energy, and/or other components from the discharge of a production process, both industrial and domestic (household) (5)(6). When viewed through an anthropological perspective, the presence of waste reflects and influences human social habits and behavior (1). It is true that environmental problems caused by waste are the result of bad human habits and behavior. The finding that residents' well water smells, tastes, is colored and murky because most of it is contaminated with e-coli bacteria and coliforms bacteria, making it undrinkable, shows how household septic tanks are poorly managed (6) (7).

Environmental degradation caused by waste seems to be a concern for many parties. Concrete actions to express concern for the environment have been shown in various forms. Through waste management that is done properly, it can provide benefits to society. If waste is managed properly such as processing organic waste into organic fertilizer, recycling plastic waste into eco bricks can have a positive impact on environmental cleanliness and economic added value for the community (8)(9).

Based on the benefits of advanced waste management, various community-based waste management models have emerged. The management model can use the concept of waste banks, composting, inorganic waste crafts, greening, and education (10)(11). Efforts made by the community in household waste management, handling/disposal and waste treatment will be stronger if supported by government participation and private services for long-term goals related to the sustainability of future generations (12) (13)(14).

Waste management by most community groups is oriented towards the community's desire to minimize environmental degradation. In addition, the orientation of community-based waste management is directed at generating economic benefits. However, the community-based waste management efforts carried out in Mayangsari village have a different orientation from most other communities. The community in Mayangsari village has a shared commitment to preserve the river that they use for tourism purposes to optimize the function of the river that flows in the area. Therefore, one of the efforts that can be made by the community to support the sustainability of tourism is through community-based waste management activities. The orientation of community-based waste management carried out in Mayangsari village is what distinguishes it from the orientation of communities in other places. What form of community-based waste management can support the optimization of the river for tourism purposes in Mayangsari village is the focus of this article.

## 2. Research Methodology

This article uses a qualitative approach that produces descriptions of what is observed (15). To sharpen the data collection and interpretation process, the method used is a case study with the research locus conducted in the community of Mayangsari Kalipancur Village, Ngaliyan District, Semarang City (16). Mayangsari Village was chosen as the research site because it has a different orientation in community-based waste management efforts. Through the optimization of the river's potential for tourism purposes, there is a community awareness and movement to manage waste properly so that it can support the sustainability of tourism. The data in this paper were obtained through observation and interview techniques. The subject of the research is the community of Mayangsari village. The informants in this study were selected purposively with certain considerations such as having knowledge about what is the problem in this article. The main informants are the head and members of the Disaster Preparedness Family (KSB) group, the Tourism Awareness Group (Pokdarwis) and the River Care Community (KSP) who have a role in educating the community regarding household waste management. Meanwhile, supporting informants are the Rukun Warga (RW) and Rukun Tetangga (RT) groups, the PKK group of RW 2 Kalipancur Village, as well as people who know the waste management process in Mayangsari Village. The field data that has been taken is then analyzed using the Miles and Haberman analysis model (17).

## 3. Research Result and Discussion

### 3.1. The Urgency of Changing the Quality of the Social and Physical Environment

Mayangsari Village is one of the neighborhoods in Kalipancur Village, Ngaliyan Sub-district, Semarang City. The village is located in RW 2 which borders the Kreo river on the east side. The management of the Kreo river's potential as a tourist destination encourages the growth of community awareness to conserve and manage the village environment for the better. The face of Mayangsari village then changed a lot, both the social face and the physical face of the environment.

Initially, Mayangsari village was considered an area that had social and environmental qualities that were not the same as housing settlements in other areas. The community in this village is known as a lower-class community with various social forms in it. The

people in this village are partly migrants from the Perbalan, Kuwasen and Barutikung areas who were relocated for disaster reasons (3). The three areas also have in common that they are suburban areas where the people have a tough character. Hence the image of the people here as outcasts. In addition, there used to be many people who worked as beggars and buskers. The social face of the people of Mayangsari village reinforces the frightening image. This image makes many people afraid to enter this area because of the bad image attached to Mayangsari Village.

The social aspects inherent in the Mayangsari village community indirectly affect the physical environment. Many low-income and low-educated residents build houses around the banks of the Kreo River. The buildings erected by residents are made of semi-permanent materials and are irregular. Therefore, the face of Mayangsari village looks slum. Many houses in Mayangsari village are not equipped with toilet facilities. Therefore, many defecation activities are carried out in the Kreo river.

Over time, the community of Mayangsari Village has made improvements to change its old image. This improvement process was carried out through a vision initiated by the head of Kalipancur Village and realized through the Semarang City government programme in the formation of Thematic Villages. The Mayangsari community was appointed to realize the Thematic Village programme through the branding of SNACK village. The SNACK thematic village is related to snack-making activities carried out by women. This programme is oriented to improve the welfare of the community, especially women, through economic activities in the form of market snack production. Through the business of making snacks, women gain economic benefits. In addition, the branding of the snack village is orientated for the purpose of empowering women, this branding is also expected to strengthen the positive image of the village.

In addition to village branding, the Mayangsari village community has made smart and creative efforts by utilizing and maximizing the potential of the existing river to become a tourist attraction. The idea of making river-based tourism has implications for massive environmental improvement efforts by the community. The improvement was carried out by the community in the form of making efforts to clean the river environment, arranging the village to make it more beautiful, neat, orderly so that it can eliminate the impression of slums. In addition, efforts to educate the community to maintain environmental cleanliness through community-based solid waste and waste management. These improvement activities are intended to support the development of optimizing the potential of the river in the Mayangsari Village area.

### 3.2. Community-based Waste Management for Environmental Sustainability

The various efforts of the Mayangsari village community to support the development of optimizing the potential of the river in the form of river tourism have attracted positive attention and appreciation from the public, especially the city government. Activities that support the development of river-based tourism are so complex as mentioned in the previous section. One of the efforts made by the community is in the form of community-based waste management activities. Through community-based waste management in Mayangsari village and environmental cleaning around the Kreo river, it is expected to provide benefits for quality environmental sustainability. In addition, this community-based waste management has minimized the habit of throwing garbage into the river. Thus, the creation of cleanliness in the village environment is expected to increase river-based tourism visits and make tourists feel comfortable when enjoying river-based tourism offerings in Mayangsari village.

The success of the community in changing habits that are less supportive of improving environmental quality such as throwing garbage out of place, poor arrangement of residential environments and careless management of household waste has changed the social and physical quality of this village for the better. One concrete form of sustainable environmental management can be seen from community-based waste management mechanisms. The household-based waste management activities emphasize the 3R principles of Reduce, Reuse and Recycle. Community-based waste management carried out in the Mayangsari Village community is oriented towards more sustainable steps by establishing policies to determine waste management mechanisms, sorting waste to minimize the amount of waste disposed of, and utilizing waste that can be recycled for further processing to have use and economic value.

#### 3.2.1. Collective Waste Collection

Initially, the Mayangsari village community managed waste independently. The community did not have the initiative to manage waste together. Therefore, in the past there were still many residents who did not have landfills at home. Some residents also took the initiative to dispose of their solid waste on the banks of the Kreo River as a result of the absence of community-based waste management. Some residents still dispose of

household liquid waste into the river. At that time, not many families had sanitation in the house, therefore there was a habit of people doing defecation activities in the river.

This situation was then addressed by the community by making a collective agreement to manage waste in a collective way. The initial steps when the community began to change from an individual waste management model to a community-based waste management model were carried out through: *first*, conducting coordination meetings to organize household waste. Through this coordination, a decision was made to set rules and sanctions. In the rules, each household was asked to provide a rubbish bin. Then, a garbage collector was appointed who would periodically take the garbage to the final dumping site. Each resident was required to pay a monthly fee of Rp. 10,000 for this collective waste collection. Set sanctions for residents who throw rubbish into the river.

*Secondly*, socializing the rules of collective waste management through village institutions. Through this socialization, it is hoped that the community can participate properly. *Third*, the community collects and disposes of waste in the right place. In this activity, the community collects which waste can still be used or processed further, and which waste will be disposed of in the trash bins available in front of the house. Furthermore, the janitor will pick up the remaining unused rubbish to be disposed of in the final landfill. This activity is done once a week.

*Fourthly*, it organizes the construction of latrines for families who do not have toilet facilities in their homes. Public toilet facilities are available in this village, but the limited number of facilities and the large population means that the number of facilities and the number of people who will access public toilets are not balanced. Therefore, a latrine-making activity was conducted for households that do not have their own toilets. Through this latrine-making activity initiated by several institutions, household liquid waste can be managed properly and minimize defecation activities in the river.

### 3.2.2. Waste Sorting

Women in Mayangsari village conduct waste sorting activities every month. Waste segregation is carried out starting from the home, so that the waste in the house is left with waste that is considered to have no value. The waste sorting process is carried out by considering the type of waste, both organic and non-organic. Plastic bottles and other non-organic waste are then collected for further processing. The bottle waste is then processed into valuable goods. Meanwhile, organic waste is then further

processed to be used as fertilizer. This fertilizer-making activity is located at Marsudi Utami Elementary School. In addition to these two things, the community also collects used oil to be further processed into laundry soap. In the existing local knowledge, the community categorizes waste into two categories: fine waste and hard waste. Fine waste refers to types of waste such as paper, oil and others. While hard waste refers to the type of waste in the form of used plastic bottles.

### 3.2.3. Waste Utilization

Waste segregation that has been carried out by the community is aimed at reducing the amount of waste disposed of in landfills. In addition, waste segregation is done for the purpose of running a waste bank programme. The waste bank programme is a programme instructed by the government. Kalipancur Village officials require each area to establish a waste bank. In line with this waste sorting activity, the collected waste also becomes material that can be collected to fill the waste bank programme.

The community in this village has a waste bank programme as instructed by the Kalipancur Village Administration. Every neighborhood in the village has been instructed to have a waste bank. The waste collected by residents comes from items that can still be utilized and have economic value, such as plastic bottles, cardboard boxes, and others. In accordance with this instruction, the waste collected in each neighborhood can then be sold to the village officer who manages the waste bank at the village level. The officer will periodically buy the waste from the waste bank manager in each neighborhood. However, the manager sometimes sells these items to junk collectors who consider the price to be higher.

The community of Mayangsari village also fills waste management activities through the utilization of hard waste in the form of plastic bottles to be used as goods that are valuable and economical. The processing of waste into valuable goods is called eco brick. Plastic bottles that have been filled with plastic material so that they become solid, are then used as materials that can be shaped and created into useful items. Eco bricks produced by the Mayangsari village community can be used as material for making gates, chairs and tables. These useful items have brought economic benefits.

Community-based waste management activities have been positive. Communal management provides an opportunity for the community to play an active role in protecting the surrounding environment. Through this waste management effort, togetherness and awareness of the importance of environmental cleanliness grow. This is in line

with the programme to optimize the river's potential for tourism activities. This waste management activity has changed the behavior of the community from not caring about the sustainability of environmental quality to caring about the sustainability of environmental quality. The concrete form of pro-environmental behavior is the behavior of enforcing waste management rules, the behavior of collecting and disposing of waste in its place, the behavior of sorting useful and useless waste, as well as the behavior of recycling waste into valuable goods through creative ways of the community.

## 4. Conclusion

Community-based waste management in Mayangsari village grows along with efforts to optimize the river's potential for tourism. Community-based waste management is urgent so that public awareness of the importance of protecting the environment grows. This community-based waste management has encouraged the community to actively participate in advancing the environment where they live. Awareness and active participation to protect the environment is needed to improve the quality of a sustainable environment.

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