

Analysis of waste management policies based on village owned enterprises (Bumkal)(empirical study on Caturharjo Village)

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Abstract. The problem of waste is a serious thing to be handled in Yogyakarta and overcoming waste through its source is an interesting thing to research. The purpose of this study is to find out the waste management based on Village-Owned Enterprises (BUMKAL) in Caturharjo Village which has succeeded in building waste management through BUMKAL Catur Sejahtera. This research uses a qualitative approach by conducting direct interviews with stakeholders and the community in waste management in Caturharjo Village. The results of this study revealed that Caturharjo Village through Perkal Number 2 of 2022 concerning waste management using (1). Waste collection is not harmful, (2). Waste management and disposal are not hazardous, (3). Community- and community-based organic compost production, (4). Combined provider of facility supports services. In addition, the findings saw that Caturharjo Village also carried out pentahelix collaboration to solve waste in Caturharjo Village.

1 Introduction

The management of waste has become a critical issue in many countries, including Indonesia, where improper waste handling can lead to significant environmental and health problems [1–4]. While previous studies have explored waste management policies in various contexts, there is limited research on their implementation at the local level in Indonesia. This study aims to address this knowledge gap by examining the effectiveness of waste management policies based on Badan Usaha Milik Kalurahan (BUMKAL) in Kalurahan Caturharjo, Indonesia. By analyzing the policy management of waste through BUMKAL, this research seeks to provide insights into how local governments can effectively manage waste and contribute to the development of more sustainable waste management practices in Indonesia. BUMDes are established to develop the local economy and improve community welfare through independent economic activities [5–7]. For a waste management BUMKAL in Caturharjo, this could involve creating jobs and revenue streams from waste collection, recycling, or processing activities. Effective BUMDes management requires proper organizational strategy, resource strategy, and program strategy [8–10]. For a waste management BUMKAL, this may include formulating a clear vision/mission, securing

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adequate financial and human resources, and implementing well-planned waste management programs. BUMDes face common challenges such as lack of financial resources, human resources, infrastructure, and effective program management [10]. A waste management BUMKAL in Caturharjo may encounter similar obstacles that would need to be addressed through strategic planning and capacity building. Proper financial management and reporting are crucial for BUMDes operations [11–13]. A waste management BUMKAL would need to implement sound financial practices and prepare reports in accordance with relevant regulations to ensure accountability and transparency [14]. To optimize its impact, a waste management BUMKAL in Caturharjo should aim to contribute to village revenue while also providing tangible benefits to the community through improved waste management services and environmental outcomes [15,16]. Balancing financial sustainability with social and environmental goals would be key to its success [17].

Waste as a solid material left over from industrial processes or household waste [18] is a problem that still needs to be resolved [19]. Yogyakarta has a serious problem since the closure of the Piyungan TPS, Bantul Bersama data, notes that there is a potential of 400 tons of waste / day This is because solving the waste problem is still conventional, not integrated, coordinated, and does not utilize the potential in the community. TPST Piyungan is the only landfill in the D.I. Yogyakarta region. The TPST has been operating for 23 years and until now there has been no expansion of the TPST location. Jogja Daily News dated October 29, 2022 wrote that the Piyungan TPST area is currently full and the community is expected to start managing waste independently to reduce the debit of waste entering the Piyungan TPST. The fullness of TPST Piyungan can have an impact on the closure of the TPST and will again make problems for the community regarding waste disposal. Jogja Daily News accessed on October 31, 2022 stated that the Piyungan TPST which was closed for 4 days had an impact on the pile of garbage as much as 1,200 tons.



Fig.1. Condition of Yogyakarta When the Piyungan TPST is closed for 4 days

Waste management has become an important issue in many countries, including Indonesia [20,21]. Many policies have been implemented but their effectiveness at the local level is still uncertain. The implementation of waste management in Caturharjo Village has shown success in waste management. This is the case. Judging from the Radar Jogja news release dated August 3, 2023 with the title “Kelurahan Caturharjo Bantul is not affected by the closure of TPST Piyungan” [22], this is when the closure of the Piyungan TPS has an impact on the accumulation of waste in various regions but has no impact on the Caturharjo village. and this makes Caturharjo Village an independent waste village based on the Bantul Regent Decree Number 377 of 2023 concerning Caturharjo Village as an Independent Waste Management Village through management using the Village-Owned Business Entity (BUMKAL).

This research focuses on a policy implementation study of BUMKAL (Badan Usaha Milik Kelurahan) in Kelurahan Caturharjo with the aim of providing valuable insights into

the efficacy of local waste management strategies. The research questions centered on evaluating the effectiveness of BUMKAL as a waste management policy in Caturharjo, hypothesizing that BUMKAL is an effective approach to managing waste at the kelurahan level. This research is important for improving waste management practices, which has significant implications for governance, environmental protection, public health, and economic development in Indonesia. Village-owned enterprises such as BUMKAL can play an important role in managing local resources and meeting community needs, including waste management.

Effective governance and management strategies are critical to the success of such initiatives [10]. A collaborative approach involving various stakeholders, including kalurahan officials, community leaders, and local residents, is key to developing and implementing successful waste management policies [23]. Bumkal management usually often faces challenges such as limited financial resources, lack of skilled human resources, inadequate infrastructure, and ineffective program management [24]. These issues could potentially affect the implementation of waste management policies through BUMKAL in Caturharjo Village. To overcome these constraints, the village administration may need to focus on capacity building, improving governance mechanisms, and ensuring accountability in BUMKAL operations. Local waste management policies face various challenges in implementation, especially in developing countries [25–27].

2 Material and Methods

2.1 Village-Owned Enterprises

Village-Owned Enterprises are the same as Village-Owned Enterprises (Bumdes), which are institutions managed by the community at the village level government to strengthen the village economy based on the potential and needs of the village (Center for the Study of the Dynamics of Development Systems, 2007). Village Minister Regulation (Permendes) No. 4 of 2015 concerning the establishment, management, management and dissolution of Village-Owned Enterprises, Village-Owned Enterprises are business entities that are wholly or partially owned by the Village or Kalurahan through direct participation from separated village funds to manage assets, services and other businesses for the greatest welfare of the Village community. The establishment of a Village-Owned Business Entity as referred to in the Village Minister Regulation (Permendes) No. 4 of 2015 concerning the Establishment, Management, and Dissolution of Village-Owned Business Entities, has the following objectives:

- To improve the village economy
- Optimizing Village assets to benefit the welfare of the Village.
- Increase community efforts in managing the Village's economic potential.
- Develop business cooperation plans between villages or with third parties.
- Creating market opportunities and networks that support the general service needs of residents.
- Opening up employment opportunities.
- Improving the welfare of the community through the improvement of public services, growth and equitable distribution of the Village economy and increasing the income of the Village community and Village Original Income.

According to Kalurahan Regulation (Perkal) No. 2 of 2022 concerning Badan Usaha Milik Kalurahan Catur Sejahtera. Bumkal Catur Sejahtera owned by Kalurahan Caturharjo focuses on the business field of waste management which aims to utilize existing waste in the community with business activities:

- Collection of non-hazardous waste
- Management and disposal of non-hazardous waste
- Organic waste compost production
- Activities of combined providers of facility support services (waste disposal)

2.2 Waste

Waste is unwanted residual material after the end of a process. Meanwhile, in Law No. 18 of 2008 concerning Waste Management, it is stated that waste is the residue of daily human activities or natural processes in the form of solid or semi solid in the form of organic or inorganic substances that can be decomposed or cannot be decomposed which are considered no longer useful and are disposed of in the environment.

Waste can be divided into several classifications. The following is the classification of waste, namely: 1) Based on Form Based on its shape, waste can be divided into two types, namely organic and inorganic waste, 2) Organic Waste Organic waste is a type of solid waste that is easily biodegradable (Teti Suryati, 2014). Some categories of this waste are dry leaves, sawdust, wood shavings, husks, corn husk straw, non-glossy paper, vegetable stalks, fruits, fresh grass, fresh leaves, kitchen waste, the pulp of the or coffee, eggshells, manure, food waste and organism waste, 3) Inorganic Waste Waste is a type of solid waste that cannot be decomposed by natural processes. Some examples of this type of waste are metals, plastics, glass bottles, Styrofoam, shiny paper and so on, 4) Based on the Source Based on the source, waste can be divided into two, namely domestic solid waste and non-domestic solid waste. Domestic solid waste usually comes from housing, hospitals, schools offices, shops and others. Meanwhile, non-domestic solid waste usually comes from forests, agriculture, plantations, industries, and so on, 5) Based on the level of danger In the field, two categories of waste or waste are known based on the level of danger, namely hazardous waste and non-hazardous waste.

Regulation of the Minister of Environment of the Republic of Indonesia Number 13 of 2012 concerning Guidelines for the Implementation of Reduce, Reuse, and Recycle Through Waste Banks, where the ministerial regulation explains that waste management must be carried out with reduce, reuse and recycle activities, or limit waste, reuse waste and recycle waste, hereinafter referred to as the 3 R system, is all activities that are able to reduce everything that can generate waste, reuse waste activities that are suitable for use or the same function or other functions, and waste processing activities to be used as new products.

2.3 Previous Study

Empirical studies or previous research contain the results of previous research, where the research is relevant to the research conducted by researchers, namely regarding Village-Owned Enterprises and Waste Banks.

The first empirical study from Agunggunanto, Arianti and Darwanto [28], in his research entitled Independent Village Development Through Management of Village Owned Enterprises, the research method used is descriptive qualitative. Where the results of this study indicate the condition of Village Owned Enterprises in Jepara Regency has been running in accordance with the objectives of the establishment of Village-Owned Enterprises and is able to help improve the village economy through existing types of businesses, namely savings and loan cooperatives, goat livestock, Waste Bank, clean water management, and trade in processed products. However, there are still obstacles in the management of Village-Owned Enterprises in some areas such as the types of businesses run are still limited and have not been able to develop, due to limited human resources who manage Village-Owned Enterprises and low community participation due to their low knowledge. The equation of

this research is that the methods used are the same and both examine Village-Owned Enterprises, while the difference lies in the object under study, namely this study examines all types of businesses run by Village-Owned Enterprises in Jepara Regency, while this study examines one type of business run by Village-Owned Enterprises in Jegulo Village, namely the Garbage Bank.

The second Empirical Study by Syahputra [29], in his research entitled Analysis of the Role of Waste Banks in Sustainable Development in Malang City with the research method used is descriptive qualitative. Where the results of this study are that the Waste Bank in Malang city plays an important role in sustainable development by providing a long-term positive impact on the environmental, social and economic activities of the surrounding community. Where the Waste Bank in Malang city can process inorganic waste using special tools to be used as raw material into new goods and crafts, while organic waste is processed to be compost and methane gas. The equation of this research is that the method used is the same and this research examines the same Waste Bank, and the difference lies in the place studied.

2.4 Methodology

The method used by researchers in this study is descriptive qualitative research method. According to Mukhtar [30], descriptive qualitative research is a study intended to reveal an empirical fact objectively scientifically based on scientific logic, procedures and supported by strong methodology and theories according to the scientific discipline being pursued. This research was conducted at Badan Usaha Milik Kalurahan (BUMKAL). This research uses purposive sampling techniques and snowball sampling, and is compiled based on primary data in the form of observation interview data and documentation.

3 Results and Discussion

Based on the results of interviews and field studies, Bumkal Caturharjo village has several waste management activities, namely: 1). Collection of non-hazardous waste, (2). Management and disposal of non-hazardous waste, (3). Community and community-based organic compost production, (4). Provider of combined facility support services. Furthermore, the research team conducted interviews and based on the results of interviews conducted by the research team, the results of Bumkal-based waste management in Caturharjo Village were obtained as follows:

- Management of organic and inorganic waste through a community-based village-owned enterprise (Bumkal).

Waste management in Caturharjo is based on Bumkal Catur Sejahtera through the focus of community-based waste management activities in Caturharjo. The waste management carried out is as follows:

- Community-based organic waste management
Community-based organic waste management involves all padukuhans in Caturharjo Village by launching the 5000 Jogangan program which is used to accumulate organic waste such as food waste, dry leaves and other organic waste to be used as compost. The results of the jogangan program compost when harvested will be purchased by Bumkal to be packaged and sold in general.
- Community-based inorganic waste management
Community-based inorganic waste management in Caturharjo Village uses a community waste bank that is required in each hamlet. The waste is then managed

by Bumkal Caturharjo. The waste is recycled into plastic ore and then sold by Bumkal as a source of income for Bumkal.

These two activities are in accordance with the village regulations that form the basis of Bumkal's business activities, namely non-hazardous waste collection, waste management and disposal, and organic compost production. From these results, Caturharjo Village can optimize waste processing in the village to keep waste out of Caturharjo Village and can be resolved at the village level.

- Utilization of Appropriate Technology by Kalurahan-Owned Enterprises.
Utilization of appropriate technology is carried out by Bumkal to support waste management activities. The technology is used to support the management of organic and inorganic waste in Caturharjo Village. The appropriate technology carried out is using organic waste chopping machines, inorganic waste chopping machines, integrated waste management laboratories which are used for educational facilities and waste management in Caturharjo Village.
- Waste management education to the community.
Bumkal Caturharjo has an integrated waste laboratory that is used to increase the capacity of waste management in Caturharjo Village because Bumkal considers that waste management needs capacity building for the community so that the community is able to manage waste better. In addition, this education is also open to the public who want to learn about waste management in Caturharjo Village.
- Partner collaboration to improve waste management in Bumkal.
Pentahelix collaboration is carried out by Bumkal and Caturharjo Village for waste management in Caturharjo Village. This collaboration needs to be carried out by Bumkal because it supports the performance of Bumkal. One of the weaknesses of Bumkal is the lack of good human resources [10,24] so that the collaboration of partners can encourage Bumkal to work better. One of the partners is by cooperating with universities to be able to foster Bumkal to run business activities

4 Conclusion

Badan Usaha Milik Kalurahan (Bumkal) Catur Sejahtera Caturharjo Village has proven to be optimal in carrying out waste management activities. This is evidenced by the award given by the Bantul Regency Government as a Kalurahan Mandiri Waste Management. The findings show that Bumkal optimizes management activities using community-based waste management in organic and inorganic waste management. To support more optimal waste management activities. Bumkal Caturharjo Village uses appropriate technology to support its waste management activities so that it is getting better at waste management. Educational activities are also carried out by Bumkal in Caturharjo Village to increase waste management capacity throughout the Kalurahan and Partner Collaboration using Penta helix collaboration to support the success of Bumkal waste management in Caturharjo Village.

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