

Social Return of Cirapuhan Village's Waste Management: Its impact to Social, Economic and Environment

Susana Ani Berliyanti¹ Gandhi Pawitan^{2*} Mumsikah C. Diyanah³ Shaquella G.

Kumontoy¹

¹Department of Public Administration, Faculty of Social and Political Science, Parahyangan Catholic University

²Department of Business Administration, Faculty of Social and Political Science, Parahyangan Catholic University

³Master Program of Social Science, Faculty of Social and Political Science, Parahyangan Catholic University

*Corresponding author. Email: gandhi_p@unpar.ac.id

ABSTRACT

Waste management has a potential contribution to the economic sector, starting from collection and transportation, machinery for waste processing, as well as their derivative products. The waste can be derived into a range derivative product, namely compost and biogas, recycled plastic and paper components. It has motivated the Cirapuhan village, Selaawi District, West Java, to set a waste management unit. The unit is operated by Badan Usaha Milik – BUMDES. The waste management benefit can be enjoyed by the community, not only in the economic sector, but also in the environmental, as well as social aspects. This paper aims to describe the ongoing waste management operation and assemble its system. The qualitative research method is applied with a case study, involving BUMDES staff, village officials, and the community. The results of the observations found the waste bank did not operate well, due to some constraint, such as a distance, transportation, collecting and sorting system had not yet occurred. In addition, there has not been an effort to encourage peoples or family involvement in waste management. The conclusion obtained requires a program that involves village communities in waste sorting, strengthening the capacity of BUMDES in transporting and placing waste, and developing partnerships with scavengers, collectors, and waste dealers operating in Cirapuhan village. BUMDES institutional strengthening programs need to be carried out intensively, so that they can carry out these efforts.

Keywords: social enterprise, social return, waste management, economic and environment impact, Badan Usaha Milik Desa.

1. BACKGROUND

The economic impact of the COVID-19 pandemic has become a major concern recently. The survey in 2020 by the Indonesian Statistics Agency, reported that 82.9% of business peoples experienced a decline in their business turnover, especially in many sectors, for example in the hotel and tourism industries. [1].

The side effect of this pandemic has spread to the workforce, millions of workers have experienced a decrease in income or lost their jobs. There are as many as 14.3% of the working age population seriously affected [2]. The following problem occurred, as in

social impacts arise, such as an increase of social problems, increasing poverty, unemployment, or crime.

On the other hand, the positive side of the pandemic's impact was expressed by the Director of Information and Communication for the Economy and Maritime Affairs that water supply and waste management have actually grown by +6.04%. This situation shows that the waste management business is one of the potential business sectors to be developed which involving the community.

West Java, East Java and Central Java are the provinces with the largest waste contributors. Waste

production in West Java reaches 23,000 tons per day, 60% can be processed, but the remaining 40% has not been handled. This is a major concern, because West Java has a mission of Champion Environment and Champion Waste Management. So that the West Java Provincial government invites all stakeholders to play an active role in environmental protection and management efforts.

In fact, since 2015 the paradigm for waste management is circular economy and green growth. The community is encouragee to participate in waste processing. Households are a major contribution in producing waste. Hence, how can the community play a role, and be wise in managing and awareness of their waste [3]. Learning from the success stories of waste management in Ciliwung and Citarum, the community-based waste management movement must start from the village, involving village officials and peoples. The villages officials involvement are compulsory as a driving force of the waste management implementation and sustainability.

The reality in the field is that waste processing is still dominated by open dumping and landfill. In fact, if it is guided by the innovation of circular economic-based waste processing or waste processing with zero waste, then the waste that should be disposed of in the landfill should be as minimal as possible or there may be no residue at all. Responsibilities in waste management have been regulated in Undang-Undang No. 18 Tahun 2008. This regulation guarantees the implementation of good and environmentally friendly waste management, this regulation also becomes the foundation of ideas in developing a Waste Bank.

1.1. Waste Bank

Waste bank is a form of institutional implementation in waste management, so that the circular economy model can be implemented. The challenges faced by the waste banks are operational and sustainability aspects, as well as benefits for the community.

The existence of a waste bank provides a new paradigm for society, which has always viewed waste as a problem, becoming a new view that waste can generate income, therefore improving the family's standard of living. The waste bank can have an initiative for processing the organic waste that is to cultivate a BSF maggot. Using the BSF maggot, organic waste can be decomposed into compost and then maggot can be used as animal feed. In fact, this effort can be a solution to the majority of organic waste. The livestock sector can also benefit from the results of maggot. The protein of a poultry feed can be fulfilled from the maggot, as substituted of soybeans and fish powder. So with maggot, it can be an alternative solution for the imported animal feed [4].

1.2. Impact of Waste Management

The waste has a negative impact either for the community or environment, when there was not an effort to reduce or manage its present. Reducing and managing the waste are an integrated initiative in managing the waste at all. Innovation in waste management appears with a circular economy model [2]. The circular economy model based on reduce, reuse, recycle, and repair (4R) has a positive impact and sustainable benefits from waste management. Positive impact on the family economy in the form of increased income and welfare [5], [3]. The waste management is also give a positive impact to the environment, such as reducing polution, friendly fertilizer, and also encourage green economic movements [6].

Waste management that is not optimal can have an impact not only on health and the environment, but also on social life [3]. Good waste management requires the involvement of many parties, such as individuals, communities, and local governments. Especially the awareness of individuals and communities as the largest waste producer. Individuals and society, not only reduce waste, but also begin to consciously carry out the 4Rs of the circular economy model. Meanwhile, the role of the government is not only to facilitate waste management, but also to continuously raise awareness to the community to do the 4Rs.

Cirapuhan Village has active economic activities, with existing potential, such as village markets, agricultural products, and bamboo crafts. High economic activity, generates a volume of waste that has an economic impact. For this reason, this paper aims to describe the BUMDES initiative in managing waste. The research question discussed is what are the social benefits for the community, as well as the impact on the economy and the environment.

2. RESEARCH METHOD

Qualitative research methods with case studies are used to answer research questions. Investigation of the processes and actors involved in waste management in Cirapuhan village requires in-depth observation. The single case that is the target of the analysis is the current performance of the waste management system. Issues in the process and key actors were explored through FGDs involving Cirapuhan village and its staff, the head of BUMDES Cirapuhan and his staff, waste management units, related units (markets, scavengers, collectors, and airports), the community, and household representatives. This research was conducted in the period January-November 2021.

Researchers are not directly involved in the waste management process, but act as facilitators. So that issues in the process and system of waste management

can be identified directly and crystallisation becomes a key issue. Meanwhile, aspects of the key actors involved in waste management, aspects related to their roles, motivations, and benefits are explored.

3. RESULT AND DISCUSSION

3.1. Cirapuhan Village's Profile

Cirapuhan Village is located in the Province of West Java, Garut Regency. Cirapuhan is small and old village, founded in 1905, has an area of approximately 751.381 hectares. The population per June 2021 was recorded at 9,107 people with 4,677 male and 4,430 female. There are 3,269 household, with 2.550 male family heads and 719 female family heads.

The livelihoods of the peoples are mostly farming, and trading, besides that they work as laborers (including farm laborers, construction workers, domestic workers). Very few people work as government officer, teachers or military/pollice. Unemployment is still high and so is poverty. The Village SDGs data recorded that there were \pm 1,683 households in the poor category, and this number increased by around 543 poor families during the COVID-19 pandemic. This is because unemployment is increasing due to layoffs, decreasing in job opportunities.

Cirapuhan Village is committed to advancing the village economy through the development of the village's owned enterprise or BUMDES. One program run by the BUMDES is waste management, namely waste from market activities and household. As one of the social business activities, waste management certainly faces challenges, although it is recognized that it still has promising economic potential by formulating optimization of its operation.

3.2. Cirapuhan's Waste management

The steps for optimizing waste management in Cirapuhan village have succeeded in identifying the processes and key actors involved. The simple waste management process and the actors involved are depicted in Figure 1. Figure 2 describes the waste management process in detail. While Figure 3 illustrates the benefits for the community, and the economic and environmental impacts.

While Figure 2 illustrates the process design of waste management that is currently happening in Cirapuhan Village. The process of waste management is divided into 4 areas, namely A) the market area, B) the household area, C) the final waste disposal area, and D) the airport and collectors' area.

Market areas (A) and households (B) are the main waste producers. Waste management activities can be focused on these two areas. The main waste management, especially in the storage and transportation. Sorting activities are a challenge for the waste management unit to be able to involve the community. The result of this sorting is organic and non-organic waste, both of which have high economic potential. The Cirapuhan village waste management unit, handed over this activity mostly to garbage scavengers. Meanwhile, the processing of organic waste is mainly carried out by families and farmers.

Based on Figure 1, waste came from activities in markets, communities, and households. Activities in the market that involve traders and buyers will leave waste. Scavengers will collect and separate waste into organic and inorganic. Scavengers transport organic or inorganic waste to garbage collectors, and waste/garbage collectors send it to the waste dealer.

In the case of Cirapuhan Village, the existing waste port is mainly for inorganic waste. In Figure 1, BUMDES has an optimal role in managing waste, namely only transporting waste from temporary landfills to final disposal sites. Meanwhile, the economic value of the waste is distributed to organic and inorganic waste scavengers, collectors, waste dealers, and farmers. In addition, waste also has a negative impact on the environment, in the form of water and air pollution.

BUMDES can have a role in waste management, if organizationally BUMDES has the ability, especially in the allocation of human resources and provides benefits to key actors in waste management. For this reason, it is necessary to identify key actors and their roles in waste management. The key actors in waste management can be identified from Figure 1, namely

- a) Inorganic waste dealers. The role of inorganic waste dealers is to accommodate and buy inorganic waste brought by garbage collectors. This inorganic waste will be further processed, sorting based on the economic value of the inorganic waste. Inorganic waste dealers will get a return of economic value by distributing sorted inorganic waste to the industry.
- b) Inorganic garbage collectors. The role of inorganic waste collectors is to receive and accommodate inorganic waste from inorganic waste scavengers. Garbage is sorted and cleaned, and then sent to the garbage city.
- c) Inorganic and organic waste scavengers. Scavengers collect and select organic and inorganic waste. Organic waste will be processed further into fertilizer, for animal feed. Meanwhile, inorganic waste, considered to have a greater economic value, is collected and then sent to collectors.

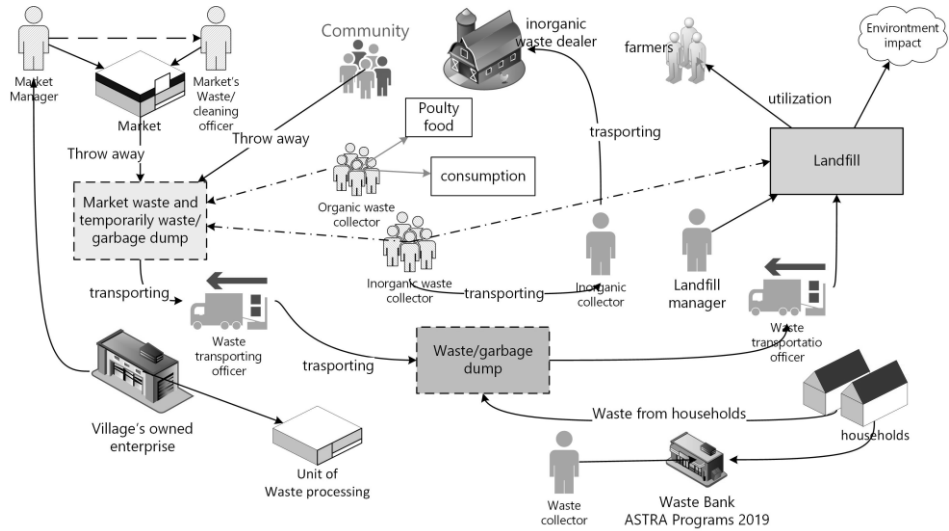


Figure 1. Waste processing and actors who are involved in the process

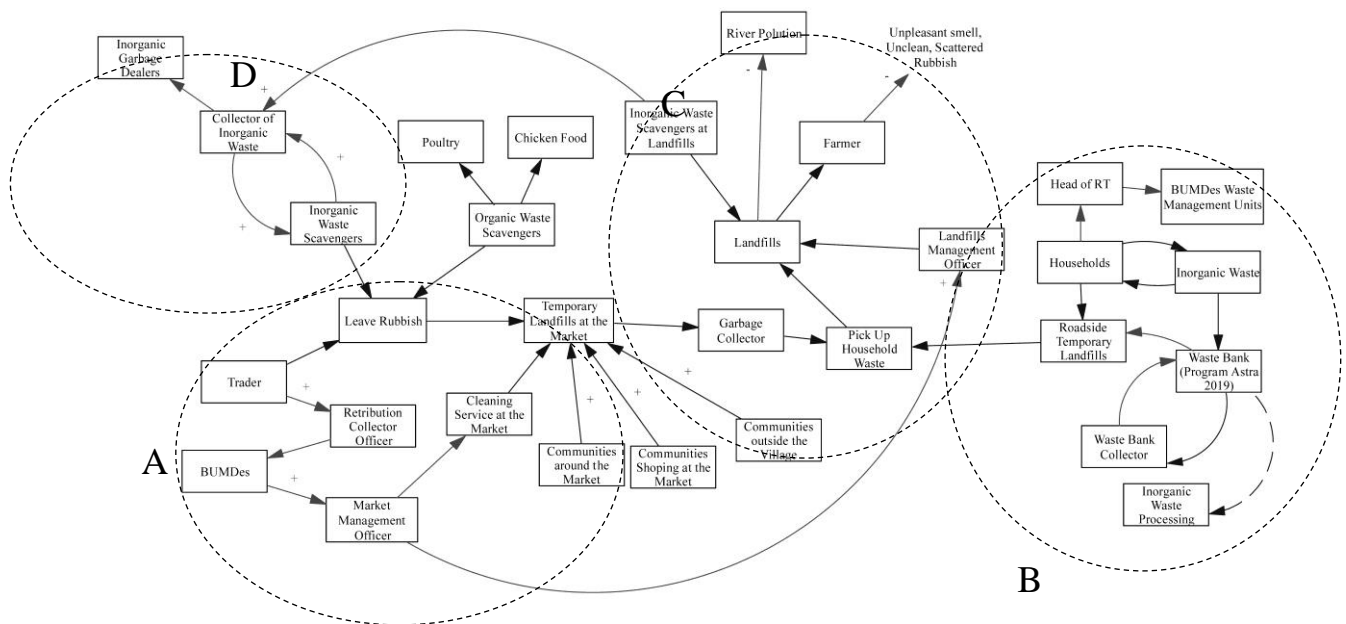


Figure 2. Design of the waste processing management at the Cirapuhan Village.

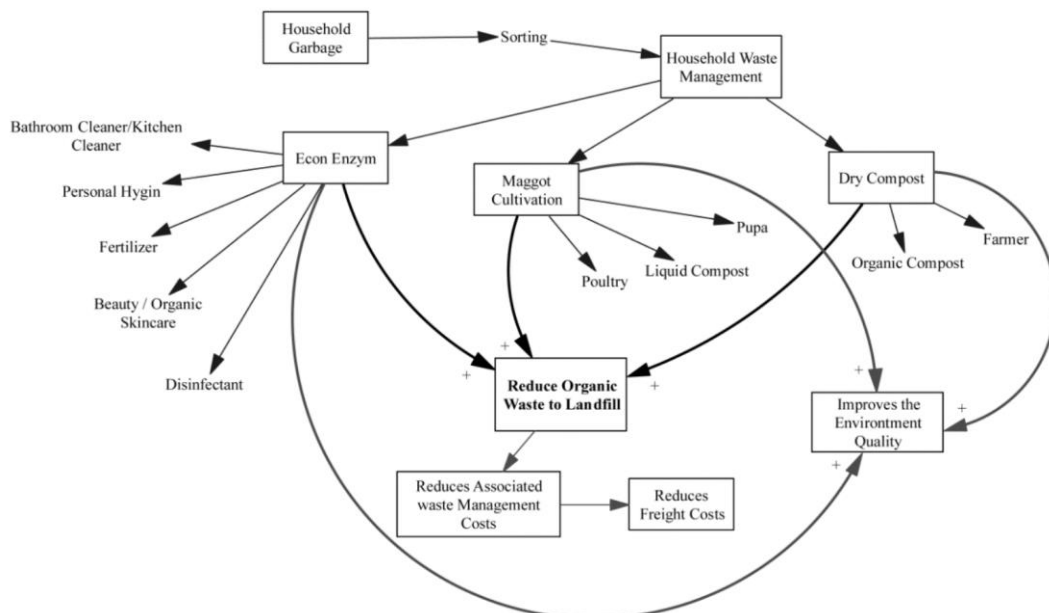


Figure 3. Social return of the waste management as benefit of economics and environment

- d) Waste management officer. There are three roles for these officers, namely market cleaners, waste carriers from temporary shelters to final shelters, and TPA management officers.
- e) Communities around the market, both as buyers and people around the market
- f) Households. Households produce waste which will be temporarily collected at a predetermined location, before being transported to the final waste collection site.
- g) Farmers, who play a major role in utilizing organic waste, as organic fertilizer or animal feed.
- h) Cirapuhan Village-Owned Enterprises - BUMDES Cirapuhan, is an institution that has a role as a driving force for the economy at the village level.

3.3. Benefit and Impact of Waste management

Figure 2 shows the whole mechanism of the waste management in the Cirapuhan, and maintained by the waste management unit of BUMDES Cirapuhan. There are three main factors in the mechanism, such as peoples, community, dan environment. The waste is produced from all activities of the peoples and may have either positive or negative impart for the community or environment, vice versa from the environment or community to the peoples.

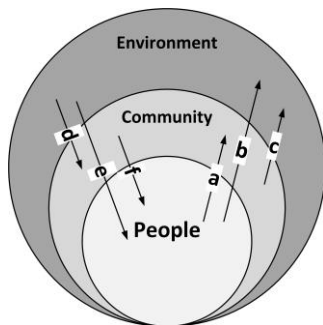


Figure 4. Benefit dan impact of waste management

But from Figure 3, the benefit and impact are positive if the waste is managed and processed by following the circular economy model. Figure 4 shows a flow of benefit and impact in waste management. Meanwhile Figure 3 described some benefit and impact if the organic waste was processed as early as in the household.

The household's waste should be sorted and separated between organic and inorganic waste. The peoples are encouraged to start this step at their home, hence the waste is managed and processed efficiently. This small step will make a positive impact for the community and environment (Figure 4, arrow a, b, and c). On the following stages, some derivatives product of the waste management, e.g. eco-enzym, maggot, dry

compost, give benefit for the community and peoples (Figure 4, point d, e, f).

Education about waste as an economic commodity must start at the village level, because the majority of the population resides in rural areas. If the villagers are aware that waste is an economic commodity, then of course they will no longer litter. In fact, it will be collected and taken to the village waste bank which will later be calculated with economic value.

3.4. Intervention Programs in Organization Strengthening and staff Empowerment

Exploring the potential capacities of Cirapuhan Village resulted in business development ideas in the waste processing sector and the development of agricultural products. Waste processing businesses provide potential for village income, including those from waste retribution, inorganic waste sorting, and organic waste processing.

To obtain the potential revenue, BUMDES must be able to manage the waste, namely in the form of institutional capabilities, available infrastructure, and waste management techniques. Institutional capacity is the ability of BUMDES as an institution in managing waste, including human resource management, administration, capital and finance, distribution, and relations with large waste dealers..

5. CONCLUSION

Waste management by BUMDES Cirapuhan, although has not operated optimally, actually has given some social benefits or social return. Social benefit for the community includes such as fostering mutual awareness for improving the family economy, encouraging the role of housewives or women in general to improve family life, and expose the insight into business opportunities from the potential resources available around their community. Waste management is a community initiative and is one of the business ventures of BUMDES Cirapuhan.

The establishment of waste bank initially was not managed optimally, and facing some constraint, such as the distance, transportation, collection, and sorting system had not yet occurred. Some keys factors those are challenge for the BUMDES in managing waste better, namely:

1. community or family involvement in waste management were still very low;
2. Beside the establishment of waste bank, some programs are needed, such as that community's involvement in waste sorting, strengthening the capacity of BUMDES in transporting and placing waste, and developing partnerships with

scavengers, collectors, and waste dealers operating in Cirapuhan village.

The BUMDES should take into account the local entrepreneurs who involves in processing the waste. The waste processing carried out by local entrepreneurs deserves appreciation. His presence, indirectly helps the government to overcome the waste problem

3. BUMDES institutional strengthening programs need to be carried out intensively, so that they can carry out the programs.

Better waste management give some benefit to the community and environment, such as:

1. Reducing anorganic waste collected to the landfill;
2. Reducing operational and transportation cost;
3. Additional income from producing eco-enzyme, maggot, and dry compost;
4. Environment friendly fertilizer derived from the waste.
5. Clean environment from the waste, especially anorganic.
6. Social empowerment among the community member.

ACKNOWLEDGMENTS

This research was carried out due to funding support from the Institute for Research and Community Service, Parahyanga Catholic University, for the period January-November 2021.

REFERENCES

- [1] S. Ayuni *et al.*, "Analisis Hasil Suvei Dampak Covid-19 Terhadap Pelaku Usaha," Badan Pusat Statistik, Jakarta 2020.
- [2] I. Purwanti, "Konsep Dan Implementasi Ekonomi Sirkular Dalam Program Bank Sampah Studi Kasus: Keberlanjutan Bank Sampah Tanjung," *Amanu: Jurnal Manajemen Dan Ekonomi*, vol. 4, no. 1, pp. 83-92, 2021.
- [3] Z. Zairinayati, N. A. Maftukhah, and N. Novianty, "Pengelolaan Sampah Bernilai Ekonomi Berbasis Masyarakat," *Berdikari: Jurnal Inovasi dan Penerapan Ipteks*, vol. 8, no. 2, pp. 132-141, 2020.
- [4] Y. Gunawan, R. Yudistyana, and D. T. Putri, "Organic Waste Management Program Evaluation: A SROI and Action Research," *Economics Development Analysis Journal*, vol. 10, no. 3, pp. 243-254, 2021.
- [5] C. M. Ningrum and A. Istiqomah, "Sistem Pengelolaan Dan Nilai Ekonomi Sampah Di Pemukiman Kampung Pulo Geulis Kota Bogor," *Jambura Agribusiness Journal*, vol. 1, no. 2, pp. 52-62, 2020.
- [6] N. Ejaz, N. Akhtar, H. Hashmi, and U. A. Naeem, "Environmental impacts of improper solid waste management in developing countries: A case study of Rawalpindi city," *The sustainable world*, vol. 142, pp. 379-387, 2010.