

# Household Plastic Waste Management Model in Indonesia

Qorry Aina, Sri Herliana, and Nur Lawiyah

School of Business and Management, Bandung, Indonesia

**Abstract.** Household plastic waste has become a major challenge in environmental aspects. Where the rate of growth of household waste is increasing every year. Then what role has been made to overcome this? This study discusses the management of plastic waste carried out in Indonesia using the literature study data approach. Literature studies are obtained from various journal articles, e-news, and reports that are accessed online. The results of the study show that there are at least 4 aspects in the plastic waste management model in Indonesia, namely, government policies, people, waste pickers, and waste banks.

**Keywords:** Waste management · Plastic waste · Household plastic · Household waste

## 1 Introduction

The relationship between household and plastic is a relationship between an inseparable lifestyle. Especially with population growth in urban areas, making waste growth also increases, especially in countries that have low and middle income (Yang, Ma, Thompson, & Flower, 2018). This is a burden for the country to manage plastic waste, which is mostly contributed through household waste. Plastics have many advantages, such as strong weight but light, affordable prices, and suitable for various needs in the modern era (Kasakura, Noda, & Hashiudo, 1999). In household waste, the use of plastic is mostly used as bags to carry groceries, and packaging household products. Continuous use every day makes the growth of plastic waste increase. This is inevitable because, the company itself needs packaging plastic for the efficiency of selling their products. Like in Indonesia, where Indonesia is the biggest contributor to plastic waste in the world (Wahyuni, 2016). Therefore, plastic waste is one of the special focus in waste management. Waste management in developing countries is more managed by open dumping, even though this method has not been fully effective, because it has a negative impact on the environment (Sekito, Prayogo, Meidiana, Shimamoto, & Dote, 2018). The government through its regulatory authority has made various policies to reduce the growth rate of plastic waste. In addition, many environmental activists have plunged to contribute to a healthier environment, through alternative management of plastic waste. Various literatures have discussed a lot about the management of plastic waste, therefore, this study uses a literature approach to determine the management model of household plastic waste in Indonesia.

## **2 Literature Review**

### **2.1 Household Plastic Waste**

Mainland and earth's waters can be polluted by plastic. In fact, it is estimated that by 2050 the amount of plastic waste in the ocean is more than the number of fishes. Not only that, plastic waste that is not handled properly can cause a variety of health problems. Plastics are more widely used for packaging and are more commonly found in household products (Rhodes, 2018). Increasing the rate of plastic waste is due to the fact that plastic waste accumulates more than decomposes. Even some types of plastic waste are categorized as "hazardous waste" for the environment (Sidhu & Desai, 2018).

Almost every aspect of household needs uses plastic for packaging, such as mineral water, cooking products, toiletries, and other needs, even as in Indonesia the use of plastic bags is still widely used to carry supermarket groceries, even though the government has implemented a payment rule for plastic bags (CNN), as applied in Malaysia (Zen, Ahamad, & Omar, 2013). The use of plastic bags is indeed a part of lifestyle, providing a charge for each plastic bag is actually not enough to convince them to use bags instead of disposables (Wu, Zhang, Xu, & Che, 2015)). The amount of household plastic waste is there, because plastic only has 1 time of life, but the time of the breakage takes a very long time. So that continuous plastic production and consumption will increase the growth of plastic waste.

### **2.2 Plastic Waste Management**

In Indonesia, plastic waste management is a big concern, because Indonesia itself is one of the largest contributors to plastic waste in the world. This can be seen directly in various waste dumps or open dumping. Where a lot of 'mountain-mountains' rubbish, the majority of which come from household plastic waste. The Indonesian government itself has given great attention to making regulations on waste management, namely the Republic of Indonesia Law No. 18 of 2008 (Bphn.go.id, 2008) One of the applied regulations is to establish a waste bank to collect various types of waste including household waste, according to the type and character of the waste bank customers, where the output of the waste bank is money. This system is effective enough to provide education to the public regarding waste management from (Dhewanto, Lestari, Herliana, & Lawiyah, 2018; Raharjo, Matsumoto, Ihsan, Rachman, & Gustin, 2017). The waste bank itself was established directly by the government while it was also established independently by the community to maximize contributions to a better environment. The application of plastic bag payment fees for each shop also began to be applied, although the response of the community was not fully familiar with this regulation. Then another waste management that has long been applied is recycling into a work that has economic value. Besides being able to become additional income, it is also a medium of creativity, and education in waste management.

### 3 Methodology

This study uses a qualitative-explorative approach, with the literature review media originating from various studies on the management of plastic waste. The results of data collection were analyzed to find out the plastic waste management model in Indonesia.

### 4 Analysis and Discussion

From the results of the literature study that has been carried out, with the main focus being the management of household plastic waste in Indonesia, a household plastic waste management model is obtained as illustrated in figure 1. Plastic waste is waste that can be managed with 3 R, namely, reduce, reuse, and recycle. Management can be carried out independently on a household scale, as well as large scale within the government regulation umbrella. The Indonesian government takes seriously to suppress the growth rate of plastic waste in Indonesia, by making regulations in Law No. 18 of 2008 as discussed in the sub-literature. Plastic waste is indeed difficult to decompose, therefore 3R is needed to reduce plastic pollution. The exploration of 3R's steps also varied, with many environmental activists directly involved in contributing to the community in waste management. The following is a complete explanation of the household plastic waste management model illustrated in figure 1.

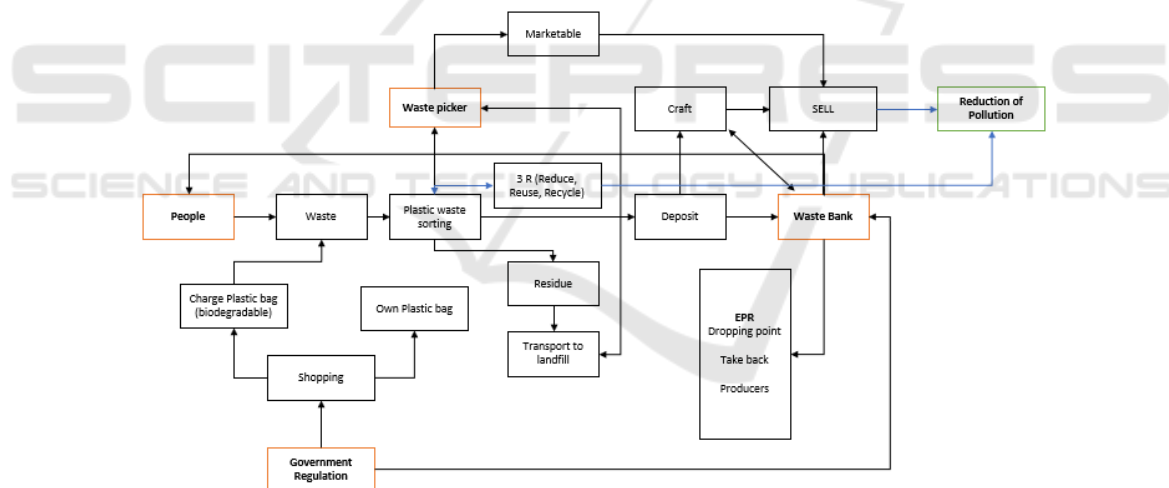


Fig. 1. Plastic household waste management in Indonesia.

Waste originating from household waste has a different waste management approach. For those who are accustomed to sorting anorganic and organic waste, even in further specifications in inorganic waste, such as plastic and non-plastic waste, they have a high awareness of sustainable environment. The government itself has provided a waste management solution that is a win-win solution, namely through a waste bank. The waste bank system is generally the same as other conventional banks, except that

waste banks use waste as a savings transaction, which is valued in rupiah. The amount of savings depends on the amount and type of waste saved in the waste bank. The waste bank will then sort again and carry out the EPR policy, or Extended Producer Responsibility. EPR is a policy, where companies can take post-customer products, which are generally types of household plastic waste. So, companies that produce household needs with plastic packaging, are responsible for their products even though the products are in the form of waste. In addition to implementing the EPR policy, the waste bank can also sell the results of waste collection to other companies that require various types of plastic waste as the company's main raw material. The plastic waste can be processed to be made into plastic seeds and produced into plastic again.

Waste management, especially plastic waste in Indonesia is not maximal, so there are still many households that do not sort their inorganic and organic waste properly. This is where the role of waste picker becomes important, they take plastic waste that has economic value, such as plastic bottles, plastic cups, and so on. The work indirectly helps suppress the plastic waste population. Therefore, the waste picker usually picks up trash in waste dumps around housing, roads, schools, hospitals, government buildings, and others. On a large scale, they take plastic waste in a waste dump, which is now a giant mountain of waste. The plastic waste they collect, clean, and sell, the system is almost the same as the waste bank system.

Another unique waste management is to convert household plastic waste into something that has selling value. This is also widely applied by environmental activists as community empowerment as well as educational media regarding the management of household plastic waste. The artistry of plastic waste does not require large capital because everything can be obtained free of charge, it is the creativity that makes art creations expensive.

What's new is that in 2019, the government implemented a policy to pay for plastic shopping bags worth Rp200 (Liputan6.com, 2019). This is done to stimulate the Indonesian population to bring their own shopping bags, so that the amount of plastic bag waste can be reduced. The government has also implemented a policy that, plastic bags provided by retailers, must be biodegradable, meaning that the plastic bags can quickly decompose. (Kementerian Perindustrian Republik Indonesia, 2019).

The illustration of plastic waste management as shown in Figure 1 shows that, household plastic waste management programs can be applied with the main focus of the household sector itself. Households are directly involved in the management of the plastic waste they produce, from various buying their various household needs. They can deposit the plastic waste to become savings at the waste bank, get additional income from the creation of waste that is made, or just sort inorganic and organic waste to make it easier for waste employees to manage the waste.

## 5 Conclusion

From the results of the analysis and discussion conducted, there are four important aspects in the management of household plastic waste in Indonesia, namely government policies, people, waste pickers, and waste banks. These four aspects have an important role in the management of household plastic waste with a different approach. Like government policy, which regulates regulations regarding the management of plastic

waste, so that the policy has a direct and indirect impact on the distribution of non-biodegradable plastic waste. The policy of suppressing household plastic waste is by requiring that plastic, especially plastic bags, be biodegradable so that they can decompose faster than non-biodegradable plastic types. Then, the role of people or those who are directly involved in the amount of plastic waste available, they have a role in sorting waste, to make the creation of plastic waste into products that have added value and selling value. From these creations can educate other people to care more about the environment. Thus, they can become environmental ambassadors in their homes and the surrounding environment. The role of waste picker is also not to be seen in the eye, they contribute greatly to the management of household plastic waste, by collecting, washing, and selling it. The output they receive is indeed money, but the output received by the environment is much greater, that is, the environment is at least not too heavy to bear the burden of growing household plastic waste. Last but not least, a waste bank, a waste bank is one of the breakthroughs in genius household waste management, where it converts waste into savings for its 'customers'. In addition to be a medium for storing waste, several waste banks in Indonesia have also implemented a variety of community development programs in waste management that are quite interesting, so that they can attract community interest and increase their concern for the environment

## References

- Bphn.go.id. (2008). Undang-Undang Republik Indonesia No 18 Tahun 2008.
- Dhewanto, W., Lestari, Y. D., Herliana, S., & Lawiyah, N. (2018). Analysis of the business model of Waste Bank in Indonesia: A preliminary study. *International Journal of Business*, 23(1), 73–88.
- Kasakura, T., Noda, R., & Hashiudo, K. (1999). Present state of waste plastics management. *The Journal of Material Cycles Waste Management*, 1(1), 33–37.
- Kementerian Perindustrian Republik Indonesia. (2019). Menperin Targetkan Produksi Plastik Urai Alami Naik 5 Persen. Retrieved from [www.kemenperin.go.id/artikel/17549/Menperin-Targetkan-Produksi-Plastik-Urai-Alami-Naik-5-persen](http://www.kemenperin.go.id/artikel/17549/Menperin-Targetkan-Produksi-Plastik-Urai-Alami-Naik-5-persen)
- Liputan6.com. (2019). Mulai 1 Maret, Konsumen Bayar Kantong Plastik Minimal Rp 200 di Toko Ritel. Retrieved from <https://www.liputan6.com/bisnis/read/3906300/mulai-1-maret-konsumen-bayar-kantong-plastik-minimal-rp-200-di-toko-ritel>
- Raharjo, S., Matsumoto, T., Ihsan, T., Rachman, I., & Gustin, L. (2017). Community-based solid waste bank program for municipal solid waste management improvement in Indonesia: a case study of Padang city. *Journal of Material Cycles and Waste Management*, 19(1), 201–212. <https://doi.org/10.1007/s10163-015-0401-z>
- Rhodes, C. J. (2018). Plastic Pollution and Potential Solutions. *Science Progress*, 101(3), 207–260. <https://doi.org/10.3184/003685018x15294876706211>
- Sekito, T., Prayogo, T. B., Meidiana, C., Shimamoto, H., & Dote, Y. (2018). Estimating the flow of recyclable items and potential revenue at a waste bank: the case in Malang City, Indonesia. *Environment, Development and Sustainability*. <https://doi.org/10.1007/s10668-018-0175-2>
- Sidhu, B. K., & Desai, B. H. (2018). Plastics Pollution: A New Common Concern of Humankind? *Environmental Policy and Law*, 48(5), 252–255. <https://doi.org/10.3233/epl-180084>
- Wahyuni, T. (2016). Indonesia Penyumbang Sampah Plastik Terbesar ke-dua Dunia. Retrieved from <https://m.cnnindonesia.com/gaya-hidup/20160222182308-277-112685/indonesia-penyumbang-sampah-plastik-terbesar-ke-dua-dunia>

- Wu, J., Zhang, W., Xu, J., & Che, Y. (2015). A quantitative analysis of municipal solid waste disposal charges in China. *Environmental Monitoring and Assessment*, 187(3). <https://doi.org/10.1007/s10661-015-4305-0>
- Yang, H., Ma, M., Thompson, J. R., & Flower, R. J. (2018). Waste management, informal recycling, environmental pollution and public health. *Journal of Epidemiology and Community Health*, 72(3), 237–243. <https://doi.org/10.1136/jech-2016-208597>
- Zen, I. S., Ahamad, R., & Omar, W. (2013). No plastic bag campaign day in Malaysia and the policy implication. *Environment, Development and Sustainability*, 15(5), 1259–1269. <https://doi.org/10.1007/s10668-013-9437-1>

