

Questionnaire Survey to Clarify Current Situation of Waste Banks in Surabaya, Indonesia

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INTRODUCTION

Waste banks rooted back to 1997 in Thailand where the “garbage for egg” project was initiated (Kladnuenklum, 2003). Through the development, the system then being adopted in different parts of the world. Indonesia is one of them and Surabaya City, arguably, is home to the first waste bank in Indonesia which started in 2006. As a concept, waste bank is known worldwide for the potential to promote source separation and resource recovery through the community-based project. However, the actual contribution to waste reduction in the recycling system is still unclear. Thus, this study aims to clarify the current situation of waste banks in Surabaya, Indonesia, and its role in promoting resource recovery.

MATERIALS AND METHODS

Phone interviews were conducted with each contact person of the central waste bank, unit waste banks, NGOs, and other concerned parties. The questionnaire comprises of the identity, address, starting year, scope of operation, storage capacity, operation frequency, collection vehicle, selling frequency, number of workers, number of customers, initial cost, operating cost, sponsor, price lists, a recap of collected recyclables, and additional information, including follow-up questions to obtain detailed data. Questionnaires were analyzed then plotted using QGIS to determine the distribution of the waste banks.

RESULT AND DISCUSSION

Waste bank is a community-based project without the government’s intervention in the development or operation and can both start and stop at community’s will. The main purpose is to educate about the needs and benefits of source segregation. Waste bank operates in Surabaya since 2006 and developed to about 755 units in 2020 along with the *Surabaya Green and Clean* program as an annual environmental management competition. The facility could be established with no initial cost or sponsor since the required inventories are either lent or invested by the community’s monthly contribution fee. The operating cost is mainly subtracted 10% from the income or depends on the community’s agreement beforehand for inventories and refreshments during the operation. The workers, instead, are considered as volunteer work or only getting a small allowance from the operating cost. The number of workers is varied from three to 22 and dominated by men.

The operational scale of each unit waste bank ranges to serve community groups of 6-250 customers, which represents the household, and in total, waste bank in Surabaya serving an estimated 35,018 households. The costumers, which are majority mid-to-low-income residence, were largely motivated out of financial reason to

get additional income or following the community's decision. The customer can exchange up to 60 types of recyclable for some cash (25–42,000 IDR/kg/unit). They can either directly cash in or deposit the value as in a regular bank. Since generally the deposited recyclables are in a small amount, waste banks encourage the costumers to save the value by offering 3–100% more value to be obtained compared to cashing in. The storage capacity of waste bank is highly affecting the operation and selling frequency. Those with no storage capacity tend to operate once a month to collect recyclables from the community and selling them afterward on the same day. An only a small share of waste banks has a cart to support gathering recyclables from the community.

In general, plastic dominates the recyclable composition in the waste bank (Figure 1). It shows that Surabaya is a metropolis with a consumptive lifestyle, shown by the high use of disposable plastic food containers. Followed by paper which mainly originated from office, school, and others. Waste banks in Surabaya are mostly supervised by any of the three parties, *Bank Sampah Induk Surabaya* (Surabaya Central Waste Bank), *Wehasta*, or *Lohjinawi*. Surabaya Central Waste Bank (SCWB) also operates as intermediate between the unit waste bank and the endpoint where collected recyclables are sold to. *Wehasta* and *Lohjinawi* on the other hand, only supervise the operation of unit waste banks and establish sectoral waste banks as a place to gather recyclables from unit waste banks before selling them. In the operation, 20 units of waste bank under *Wehasta*'s supervision are covered by SCWB for collection for the location is closer than any sectoral waste bank (Figure 2). Approximately, there are 10 individual customers in each sectoral waste bank, an average of 45 customers in each unit waste bank, and 933 individual customers were assumed in SCWB. The current operation estimated to only covers 0.16% (3.5 ton/day) of the generated waste and 4% of the total household in Surabaya.

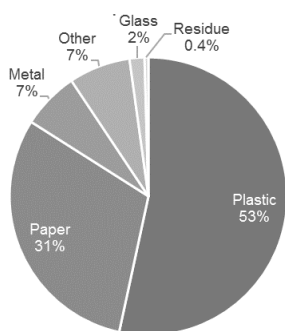


Figure 1. Recyclable Composition in Waste Bank

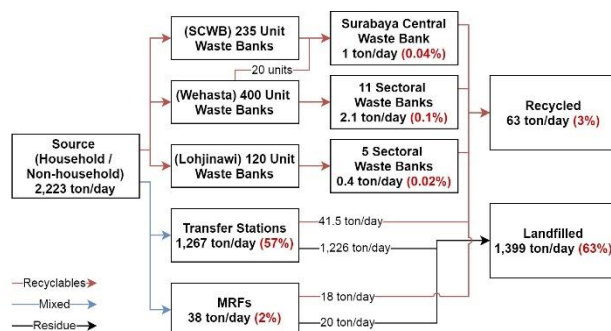


Figure 2. Waste Bank's Role in Waste Reduction

CONCLUSION

Waste banks share a small contribution in MSW reduction yet offers a higher recyclable quality for the recycling systems. Shortage of storage spaces is a major issue that restrains the growth of the system. Additionally, its establishment and operation are fully on the community's will and commitment as a volunteer, therefore, more solid and promising treatment to reduce MSW is required.

REFERENCES

Kladnuenklum K. (2003) Waste recycling bank at Ruam Kan Saeng Community. Special project study, Master Program in Public Administration, Burapha University, Thailand