

Optimizing Community Waste Banks

LEARNING FROM SEMARANG

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This case study has been developed as part of Urban Ocean, one of Resilient Cities Network's multi-city programs, co-designed and delivered with our partners Ocean Conservancy and The Circulate Initiative. Urban Ocean supports cities in assessing their risks and vulnerabilities as well as gaps in their waste management systems that lead to plastic leakage into the environment and the ocean. It helps cities to identify actions, design better projects and innovative solutions, leverage partnerships, and finally connects cities and their projects to potential funding sources.

Urban Ocean is currently being implemented in six cities in Asia and Latin America and supported by five cities in Europe and Asia Pacific that help their peers to develop projects that allow them to address current and future challenges. The program has a strong emphasis on peer-to-peer learning and knowledge exchange.

The case study series aims to highlight good examples in resilient urban waste management from across the world, and were selected with the following guiding criteria in mind:

- The initiative addresses multiple shocks and stresses
- The initiative exhibits multiple qualities of resilience
- The initiative yields multiple benefits, as it contributes to the overall resilience of both the waste management system and the city as a whole

CASE STUDY TAGS

- ✓ PROSPEROUS COMMUNITIES
- ✓ CIRCULAR SOLUTIONS

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Community waste banks are a widespread phenomenon in Indonesia, providing small scale waste reduction whilst creating financial value for the community. Semarang has over 200 community waste banks. This case study describes its challenges and opportunities, using different examples that demonstrate how to create co-benefits from waste banks.

Shocks and stresses



ENVIRONMENTAL DEGRADATION
Leakage at upstream



INFRASTRUCTURE FAILURE



INADEQUATE WASTE MANAGEMENT SERVICE
Limited resource and capacity for waste collection

Qualities of resilience



INCLUSIVE
Active participation of diverse community members



FLEXIBLE
Building on existing community structure



Semarang residents produce around 1270 tons of daily waste.

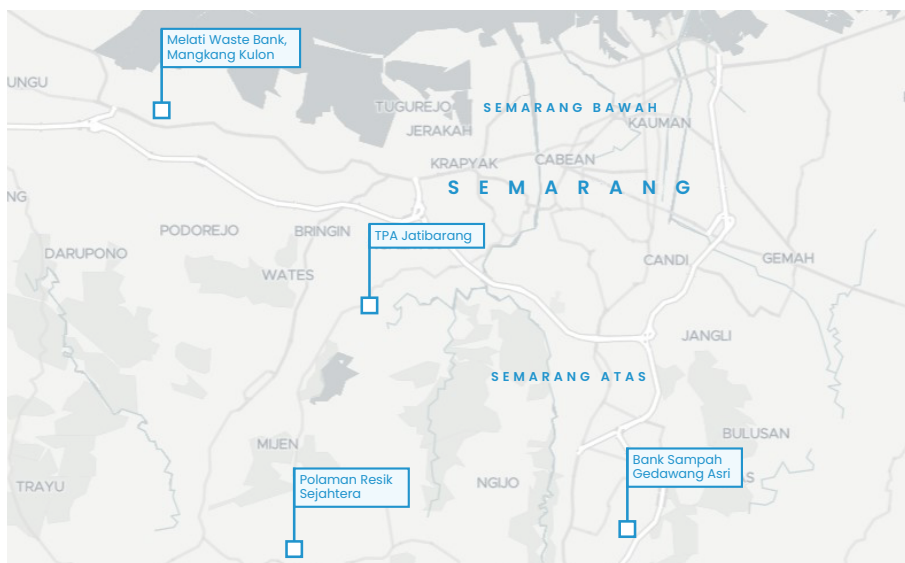
photo by @badroezaman



CONTEXT

Semarang is a city of 1.7 million inhabitants on the north coast of Central Java, Indonesia. It comprises two primary topographies: lowland areas and hilly upland, with four main watersheds containing rivers and streams. The lowland in the northern region along the coast is known as *Semarang Bawah* (Lower Semarang). The old city center as well as the political and commercial centers are located in this area. Meanwhile, the hilly south region is known as *Semarang Atas* (Upper Semarang). Waduk Jatibarang (reservoir) and the TPA Jatibarang (landfill) are located in the upper area, with city development increasingly moving in that direction. The river is one of the primary water sources in Semarang but is threatened by river pollution due to domestic and non-domestic waste.

While exact numbers vary across data sources, municipal waste management services do not cover the whole city. A study conducted for Waste-to-Energy plant preparation in 2019 estimated around 5% of waste goes uncollected.¹ However, other studies outline more pessimistic numbers. Semarang Waste Management Master Plan states only 87% coverage while the Circularity Assessment Protocol report, conducted as part of Urban Ocean program, states 61% coverage. Moreover, the main Jatibarang Landfill (TPA) is nearly at capacity and is estimated to be full by the end of 2021.



¹ Cardno, 2019



APPROACH

One of the most popular strategies promoted by the Indonesian government nationwide, including the City of Semarang, is the community waste banks program. A waste bank operates at the community level on various scales using similar principles as banking. However, instead of depositing money, people will deposit waste that can be recycled. The waste collected will be sold to private recyclers, and waste bank member get monetary value in return. As such, a waste bank encourages waste reduction and tackles pollution, while generating community level economic benefits.

In Semarang, there are approximately 212 units of waste banks all managed by communities with an average number of 110 costumers per unit. However, a study by Bintari Foundation found that the amount of waste that waste banks per year can reduce in Semarang reaches only 826.8 tons. Compared to the 1270 ton of daily waste generated, this remains far from the 30% waste reduction target.²

There are approximately 212 units of waste banks all managed by communities

Waste banks are operated mainly by environmental volunteers. The scale is ranging from *dasawisma*³ level (1-15 households), *Rukun Tetangga/RT* or neighborhood level (up to 50 households), *Rukun Warga/RW* or community level (70-100 households) to *Kelurahan* or subdistrict level (300+ households).

While waste banks are promoted as a good practice, successful implementation comes with various challenges. The amount of waste reduction is low, and without financial incentives from government it is difficult to remain operationally sustainable. The closing down of waste banks is not uncommon. Despite these challenges, the waste banks movement is understood to have contributed to change people's behavior towards waste.

Bintari Foundation identified several difficulties in the operation of waste banks such as lack of participation, low volume of materials that can be recycled, and waste collection infrastructure that is not meeting the needs for

² Bintari Foundation, 2020

³ *Dasawisma* means 10 houses, or ten neighboring families

wider recycling practice. However, several waste banks have been creative in embedding innovation. Here are three examples:

1. Whole Lot Approach in Melati Waste Bank of Mangkang Kulon

The high composition of organic materials and low level of waste that can be recycled are often cited as a challenge to the success of waste banks. In the RW 3 neighbourhood of Mangkang Kulon Subdistrict with about 50 households, these challenges are turned into opportunities⁴. The Subdistrict Office of Mangkang Kulon provided training to sort waste in RW 3. Each month, the waste bank manages 140 kg of waste.

Beyond just delivering training, the Subdistrict Office facilitated the establishment of the community groups to organize the waste banks and is linked to Kotaku, National Program of kampung⁵ improvement called "Cities Without Slum." In this RW, the community is not just managing the waste that can be recycled. With the sorting, the organic waste is processed into compost for urban farming and the Subdistrict Office also facilitated the urban farming group to connect with companies that want to buy the product.

For the non-organic products, the group sorts the waste into materials that can be upcycled into products such as broken glasses painting, while the rest are sold to private recyclers. With the 'whole lot' approach, people in RW 3 benefit from a cleaner and improved environment while getting financial value from selling recycled materials, upcycled products and urban farming produce.

Melati Waste Bank integrates urban farming into their practice



4 From Suara Merdeka article in Indonesian, Jeli Melihat Potensi Warganya (Smart to tap the potential of its citizens) <https://www.suaramerdeka.com/smcetak/baca/204634/jeli-melihat-potensi-warganya>

5 Kampung is often translated as urban village, settlement in urban area with its own community and local characteristic. The above RWs delineation often adopted the kampung area.

2. Working at Scale and Leveraging Partnerships in Gedawang Asri

The question of scale has been one of the main challenges of the sustainability of waste bank. In Gedawang Asri Subdistrict, the waste bank is organized at the subdistrict level and covers about 400 households. Gedawang Asri has 10 RWs and each has its own waste bank, and a team at the subdistrict level is taking a coordination role across the 10 waste banks. With an above average number of customers, the waste bank receives enough volume to attract private recyclers. Each month, Gedawang Asri manages a waste volume of around 1.3 tonnes.

In addition, the waste bank has managed to garner support and partnerships from various organizations. Supported by academics from Universitas Diponegoro or by CSR efforts such as from PLN (National Electricity Company), the waste banks organized various trainings such as on product upcycling, producing organic fertilizer, and promote 3R movement to schools within Gedawang subdistrict.⁶ For the upcycled products, the waste bank also managed the showroom of the products, including the store's digital version, allowing wider reach to customers.

3. Levelling up with Soft Loan Services

Despite the waste bank title, generally, community waste bank's activity is limited to depositing waste for saving. In waste bank Polaman Resik Sejahtera, the waste bank has 105 active customers and the waste bank activity is conducted once a week. To make the waste bank more attractive, Polaman Resik Sejahtera waste bank is combined with a cooperative where members can take out a low interest loan⁷. The aspect that makes this cooperative different from others is that the maximum loan for household is determined by the total amount of recycled waste collected by the household. This requirement is to encourage households to drop off more recycled waste to the waste bank.

⁶ From more information (in Indonesian), check the, Gedawang Asri Waste Bank Blog at <https://bsgedawangasri.blogspot.com/> and the video profile on Merubah Sampah Menjadi Berkah (Turning Waste into Blessing) <https://www.youtube.com/watch?v=X-Wf-pbc4Gkk>

⁷ Bintari, 2020

IMPACT

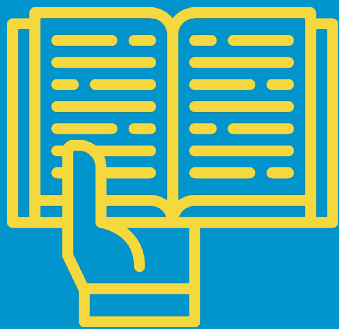
The waste bank movement is believed to contribute to raised awareness of the local communities toward 3R. However, for reasons outlined above, operating a waste bank is not always straightforward and there is scope to increase their contribution to city-wide waste reduction and resilience.

Still, we can see positive trends to improve waste banks from examples presented above. From those waste banks we can learn the following:

- Support and facilitation from the local government, such as demonstrated by subdistrict office in the case of Melati/Mangkang Kulon and Gedawang Asri, is crucial. This allows the waste bank to get better access to training, partnerships, and to operate at scale. The waste bank should not serve as a replacement to municipal waste management services, and local government should play an appropriate part in this effort to reduce, reuse and recycle waste.
- A holistic approach in seeing waste beyond simply selling them to private recyclers can provide better monetary values, as demonstrated by utilizing organic component as fertilizer for urban farming and product upcycling in Melati.
- A waste bank should be creative in how to bring more customers and promote further waste reduction. Combining waste bank with a soft loan in cooperative format could be more attractive for customers as can be seen in Polaman Resik Sejahtera.

The community working together at Sempulur Asri waste bank, one of the waste banks in Gedawang Asri





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Merubah Sampah Menjadi Berkah

(‘Turning Waste into Blessing’), <https://www.youtube.com/watch?v=XWf-pbc4Gkk>

DISCLAIMER: THIS CASE STUDY IS INTENDED FOR KNOWLEDGE-SHARING PURPOSES ONLY, AND SHOULD NOT BE RELIED UPON BY ANY THIRD PARTY.



