Waste Bank as Community-based Environmental Governance: A Lesson Learned from Surabaya

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Abstract

This paper discusses an implementation of waste bank as community-based environmental governance. Waste bank as a business is owned by people who consider waste as a valuable economic commodity and savings, has instruments that involve community in waste management. In Surabaya, waste bank grows rapidly and has supported community’s livelihood and encourage people’s self-reliance in environmental management. The objectives of this study are (1) analyze the role of waste bank in supporting community-based environment governance; and (2) analyze how public engagement (community, government and private sector) by waste banks implementation creates effective and collaborative environmental management. This study is conducted using descriptive-analytics based on informant interviews, desk study, and field observation.

1. Introduction

1.1. Background

Waste as industrial and household leftover increases in quantity along with the rising number of population. Highly populated city and neighborhood are the main sources or production of waste. Approximately, the number of...
waste in Indonesian cities reaches 38.5 million every year or 200.000 ton every day, an increase of 2-4 percent every year. Indonesian waste data shows that the highest number of waste source is household (48%), followed by traditional market (24%), commercial area (19%) and public facilities. The rising number of waste production, every year has been a problem due to limited capacity of the landfill area and the difficulty to expand the landfill area.

![Fig. 1. (a) waste management; (b) the source of waste in Indonesia.](image)

Waste management has a complex and long process, not only considered as engineering problems, but also as a management paradigm. The solution is not limited to the end-of-pipe system, but management system such as waste reduction from its source, waste-sorting, until recycling process. Thus, effective environmental management system is needed, which is discussed in this paper, by engaging public as community-based environmental governance. Public participation must be taken in assumption that the public already have awareness and knowledge in waste management in their smallest neighborhood community. Human and social resource becomes a significant issue in waste management, in how to endorse the public as liable resource and as a main actor in waste management.

Waste bank is one of community-based waste management system that enables public to actively participate in managing their environment. Waste management has several instruments to stimulate community manage their waste independently in their household and equally exchange it into saving. The instruments have to ensure the mutualism relation that the public get real profit and benefit in participation process.

In Surabaya, waste bank development as a community-based waste management conducted by coordination between local government, the public, and the private sector. In four years, waste bank in Surabaya developed into 180 branches in 31 local districts and had more than 10,000 accounts. The development brings positive impact such as reduction of waste distribution into landfill areas. In addition, it also builds pro-environmental behavior and economic support for the public.

1.2. Objective

This paper urges to analyze the role of social resource development in a community-based environmental governance system through waste bank mechanism. Sustainable development paradigm is translated as community empowerment with waste bank as a part of waste management system. The objectives of the paper are following:

- Analyze the role of waste bank in supporting community-based environment governance.
- Analyze how public engagement (community, government and private sector) by waste banks implementation creates effective and collaborative environmental management.

The following study is conducted based on studies in currently developing creative era, in which human and social resource plays an important role in a development, including environmental governance. Ideas or intellectual capital is an essential factor for community to support innovation that assists economy growth and development (Steenhoven in Franke, 2005). In community-based environment governance, intellectual capital also activates the community to contribute optimally.
1.3. Research Method

This paper is a qualitative research with analytic-descriptive methods. The study describes data and analyzes it with a normative theory as comparison. Field observation carried out in Kampung Ngagel, where waste bank system has been implemented as environment management. Data are collected from literature study, as well as, interview with manager of Bina Mandiri waste bank, community leader of Kampung Ngagel, and Head of Cleanliness and Public Parks Office of Surabaya as the local government. Statistic data about achievement is inserted to support the study.

2. Community-Based Environmental Governance

2.1. Environment Governance in Sustainable Development

Governance refers to a system enforced by one power (government) and a part of a political process (managing power and resources) by government with some interests (Verhagen in Franke, 2005). In democracy system, environmental governance is an integrated system collectively runs by government, public, and private sector in order to drive sustainable living. Environment governance is a phase when human realize the importance of management responding to mass-production by industry that generates a residue. Human in the era is not look after the environment as a tradition, but more to a rational problem-solving and requirements in order to survive (Koeswartojo, 2006). Referring to this conception, every stakeholder is actor of development in environmental governance. Based on main actors in a political system, the stakeholders of development are:
- Government, as the initiator of governance system including regulation, policy, and controlling mechanism.
- Public or community, as the implementer of a system.
- Private or corporation, as the implementer of a system and support the funding.
- Media, as a connector between government and the people, and vice versa. Local media also take part in educating and setting public opinion.

Preferably, the roles of them are balanced. Thus, they can contribute effectively. Participation system is a first step to assist the government, to place public and private as an equal partner (Steehoven in Franke, 2005). The implementation of the system requires collaborative governance. Relation and communication between stakeholders have to be built, and understanding agreement ought to be done with consensus (Morse, 2004).

2.2. Community Empowerment in Environmental Governance

Morse (2004) stated that community always has awareness in building a better living by their own. Community has a power to build and manage on their own and create their own “governance” based on knowledge and value they have (Rose in Li, 2012). People are not only united by geographical and administrative territory, but also by the emotional relationship, in which individual identity is built through the bond of meaning and distinctive cultural values. The government’s role is no longer only as planner and regulator, but also empowering, stimulating, and facilitating. The government can give freedom to people in finding their direction as the development of autonomous attitude and responsibility (Li, 2012). This leads to the understanding why “public participation” can play a significant role in governance mechanism.

Associated with environmental governance, Koeswartojo (2007) explained that participation is built on public awareness, which not only comes from knowledge but also “conscience”. Knowledge and education are not the only factors in forming pro-environmental behavior, despite its enormous influence in shaping normative discourse in a community. Conscience is an abstract concept, but it explains how awareness emerges from personal choice (the free-will), whether due to internal factor or belief and tradition (Kollmuss and Agyeman, 2002).

Consequently, external interventions such as education and campaign affect on personal preference by the process which takes more time or in a long term. This effort called as “social engineering,” a part of community empowerment. The key to empowering a community is “self-reliance building” in human resources development (Prijono and Pranarka, 1996). The first step in “self-reliance building” is economic independence, and the second
are intellectual and expertise independence. This is a community development as a part of a social aspect in sustainable development.

2.3. Waste Bank as Household Waste Management

Waste bank system was introduced firstly in Thailand in 2006 as a breakthrough in ‘saving waste’. The inorganic waste is collected and sorted based on several categories to be a saving account. The amount of the saving can be withdrawn in occasional time. The public waste-saving is sold to waste-collector for further reuse or recycle. The first waste bank in Indonesia was established by an entrepreneur in Bantul, Yogyakarta in 2008. During five years of its implementation in Indonesia, approximately there are 886 waste banks are developing with 84.623 customers.

Waste bank can be categorized as an attempt of household waste management, stated in Government Ordinance No.81 year 2012, which necessitate producer to commit reduces, re-use, and recycle in waste management. Waste bank also has now become one of Innovation of Urban Management (IMP) in the waste management program by involving public and private sectors. Waste bank management is stated in Ordinance of State Minister for The Environment No.13 year 2012, consists of waste bank management in general and the scope of the works, consequently illustrated that waste bank has taken part in waste management system with participation of public as the basic principle. The basic intention is to share responsibility to the public and private sectors. In addition, waste bank could function as dropping point, a place for community to collect waste collectively and turns it into saving. The economic value of saving becomes an “incentive” for the community to sort and collect the waste.

The indicators of success waste bank as a part of waste management are:

- The decreasing of waste tonnage in a landfill area
- The increasing of the number of settlements (kampungs or residential) which implement waste bank.

Waste bank concept relies on “self-reliance” of a community both in managing the company and controlling the cleanliness in their neighborhood. In practice, this concept is more accepted in kampung rather than middle-class housing. Kampung is typical of high dense urban settlement mostly inhabited by lower-middle-class people. Sedentary culture based on no authority life and ready to welcome urban changes is the characters of urban kampung community (Silas in Badan Perencanaan Pembangunan Kota Surabaya, 2012). It has unique characteristics, on one side, they are part of urban society, welcome with modernity and mostly well or average educated. In one another, urban kampung community still bonds with tradition, such as burying buffalo’s head in building process as tribute to nature, kenduren or selametan (festivity) as a form of gratitude and togetherness is still maintained. Family and social ties are important. Thus the view such as mangan ora mangan kumpul (togetherness in good and bad times), gotong royong and gugur gunung (working together with voluntary), persist. Modernization appears on rationality in problem-solving and how they utilize nature into build environment. Social value is the heart of social and economic relations in urban kampung (Elander, 1999). The power of local culture shapes pride as software that moves a community in building life together (Rutten in Franke, 2005).

3. Context: The Waste Bank in Surabaya

In Surabaya, 15 waste banks were firstly introduced in 2010. Until 2013, the number of waste bank developed until 180, including developing branches in a local district with an average turnover between 350,000 until 5,000,000 rupiahs per month. In Surabaya, waste bank is held by local communities as a small scale entrepreneurship with community participation and social-economy orientation. Waste bank developed more significantly in kampung than in middle-class residential. Based on waste bank manager’s experience, kampung communities have greater enthusiasm than the middle-class residential. They are interested in the concept because of the profit from waste-saving that can support their daily living expenses. In contrast, formal residential communities that are middle-high income communities are not interested in waste bank because of their settled economy.

There are nine waste bank companies in Surabaya; each has branches developed in kampung communities. Bina Mandiri Waste Bank is the biggest waste bank with 120 branches with turnover almost 72,000,000 per month - the number is greater than other waste bank company. Every branch has its waste management system, whether individual or collective. Individual system endorsed the customer as an individual or a person which means a transaction could be done anytime. Meanwhile, collective system runs by a community using communal procedure,
from waste-sorting, waste-collecting, until saving-sharing. Several waste banks already created an innovation in developing exchange system, such as paying electricity with waste-saving and integrated waste bank into co-op system in order to promote systematic people-centered economy.

Table 1. Accounts and Turnover of Waste Banks in Surabaya.

| No | Waste Bank                  | Account | Turnover per month |
|----|-----------------------------|---------|--------------------|
| 1  | Bina Mandiri                | 730     | IDR 72.000.000,-   |
| 2  | Adiguna RW IX Babat Jerawat | 285     | IDR 16.540.000,-   |
| 3  | Pitoe RW III Jambangan      | 85      | IDR 10.500.000,-   |
| 4  | Rukun Karya                 | 168     | IDR 2.000.000,-    |
| 5  | Jepara Makmur               | 61      | IDR 1.600.000,-    |
| 6  | Makmur Sejahtera RW IV Kedung Barak | 126 | IDR 2.890.000,- |
| 7  | Sumber Rejeki               | 102     | IDR 1.500.000,-    |
| 8  | Untung Bersama RW V Morokrembangan | 70 | IDR 1.900.000,- |
| 9  | Bagus Karya                 | 89      | IDR 1.000.000,-    |

Waste management program seeks another innovative approach more than regular waste-saving. Bina Mandiri Waste Bank establishes community development program such as recycle a workshop and waste-sorting training. Some of the waste banks also cooperate with local NGOs in environment campaign. Imposed by coordination between local institutions (Puskesmas and PKK), schools, and universities, these programs promote waste bank system to the public, proposing a new branch and new customer, and collecting funds from government and private sectors. The main issue for waste bank is infrastructure. The more branches, the more infrastructure is needed such as waste cart and waste pool. For this reason, waste bank must maintain relation and communication with government and private sector in order to acquire financial support for policies or Corporate Social Responsibility (CSR).

Best practice of waste bank in Surabaya is acknowledged for the reduction of inorganic waste up to 7.14 tons per weeks. This achievement lessens the burden of waste collection station significantly. In addition, Merdeka dari Sampah (Free from Waste) and “Surabaya Green and Clean” competition as waste management program by the government also plays a role in waste reduction. Waste bank system application in participating community is one of the criteria in the competition.
As urban society, Surabaya’s residents are open to transformation and innovation. Dick (2002) stated, as the city was formed by the port and trading activity, working-class life is a common urban phenomenon in Surabaya. Surabaya’s residents are people who live between two cultures, traditional and modern. Even though they are still holding to their roots, they are open to new things as long as those are good for long life together. “Arek” as Surabaya’s culture, which is a combination of Mataraman Java and Pandulangan culture with modernity, produces an open society, religious, egalitarian, tolerant, high solidarity. The guyub (solid) culture and communal life is one of the factors that supports waste bank management in Surabaya. Collective system is optimized if it is supported by good leadership from community leaders, transparency in its management and active participation of the community members.

Social bonds between Surabaya kampungs remain strong, formed by collaborative works between kampungs. The improved kampungs as the winner of a competition (Surabaya Green and Clean) assist the beginner ones. The beginners will be helped in improving the environment condition. They are highly motivated to perform better when they see the benefits in their environment. They mutually encourage each another by holding talks regularly.

4. Analysis

Based on indicator of success, the reduce of waste tonnage has been achieved, up to 7,14 tons per week. In 2005, the number of population was 2,740,490, and waste sent to landfill is 1.819 m3. This amount had been decreased until 2011. The details are shown in this diagram below which shows waste bank as community-based waste management successfully played its role.
The number of waste banks in Surabaya increased from 2010 to 2012 by more than 50% and 30% from 2012 to 2013. The significant increase indicates improvement in household waste management through waste bank program in communities.

Waste bank also becomes a tool for bringing together stakeholders: local government, public (communities), private sectors, NGO and mass media. Communities are the main actor in waste management. Government, represented by Cleanliness and Public Park Office of Surabaya, serves as a facilitator in bridging stakeholders: NGO with communities, NGO with private sectors, and private sectors with communities. Private sectors have a role in funding (by CSR programs) and as a partner in a management. NGOs play a role in assisting communities in environment campaign and workshops. Mass media acts as a connective medium of information and discourse that supports the implementation of environmental management programs.

In Surabaya, the collaboration between government, public, and starts with building public trust towards the government capability and opening public aspirations. This hard work is maintained with the role of media (radio and newspaper) as communication tool between government and the people. Interactive programs such as Bincang Warga (talkshow) presenting community leaders, professionals, and civil servants have been implemented for years and effectually building relation between stakeholders.
The other form to stimulate pro-environmental culture, is giving a reward by mechanism of city annual cleanliness competition which held by local government, such as Merdeka dari Sampah (Free from Waste) and “Surabaya Green and Clean”. Assessment criteria in the competition are utilization of green infrastructure in the environment, water treatment, and waste bank as waste management. The increasing the number of participants in “Surabaya Green and Clean” indicates the succeed of waste bank implementation as environment governance in communities.

5. Conclusion

Waste Bank as community-based environment governance has instruments that can establish self-reliance in a community. Economic independence formed by livelihood support from the profit and intellectual independence formed by sorting and managing waste in a domestic environment. The instruments are:

- **Economy instruments**, as the waste has economic value that can be converted into saving and used as exchange tools. This instrument supports low-income communities.
- **Social instruments**, as the mechanism of waste bank, requires communal interest in community (in kampung or other neighborhood (RT/RW)) and solid community. Regular program of waste bank will create social bonds and cohesion in the community to further democratic governance.
- **Education instruments**, as the process of waste bank including waste sorting, collecting, and recycling would able raise collective awareness within the community, which hopefully affect in pro-environment culture sustainably.
- **Technology instruments**, as community-based management encourages innovation in waste bank development such as effective waste-collecting and integration with co-op (koperasi).

Waste bank as community-based environmental governance applies culture as software in governance system. In addition, relation between public engagements with a government program is by placing people as partner and driver of government’s development program. The key factors of succeeding waste bank as community-based environmental governance:

- **Economic**, educational, social, and technological instruments are used well in community empowerment, as an effort of public participation in environmental governance.
- **The role of local government as regulator**, facilitator and stimulating the other stakeholder is well played.
- **Strong will and collaborative environmental governance** with no gap or discrepancy between stakeholders.
- **Urban kampung** as a form of communities that waste bank is well implemented has character arek as local culture, still hold a tradition and open in modernity, in shaping sustainable urban future life.

There should be further development of waste bank management. Government should make further regulation to protect the managers and customers of waste banks. This can be formed as Standard Operation Procedures, integrated program between waste bank and co-op (koperasi) or common bank. Consequently, modal and profit can be optimally managed for both managers and customers welfare. Promotion or extensification program by people and government is required. Thus, community-based environment governance can be finely-developed in the future.

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