KANG PISMAN

Paving the Way to a Zero Waste Indonesia

gaia

ZERO WASTE CITIES ASIA SERIES

Bandung City, Indonesia

KANG PISMAN

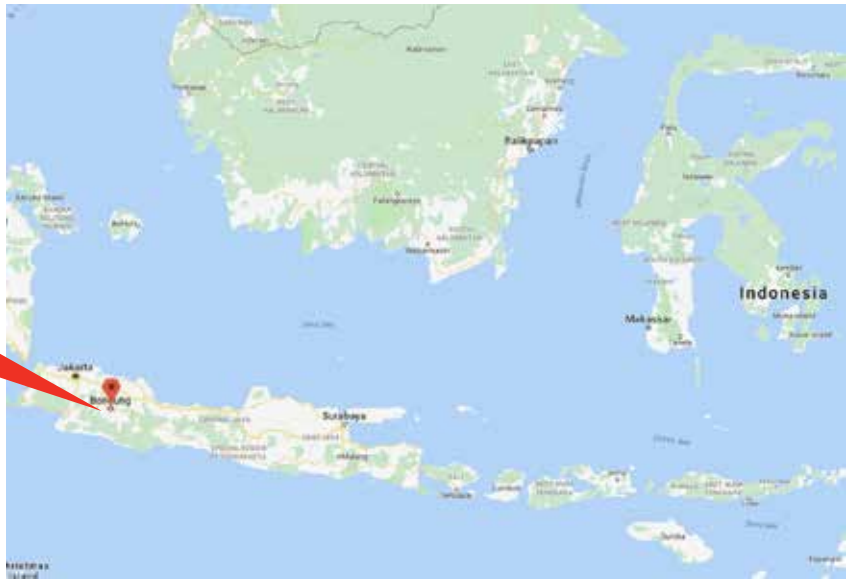
Paving the Way to a Zero Waste Indonesia

Community workers harvesting vegetables in an urban farm. © MOKHAMAD ERY BUKHORIE

At 2 A.M on 21 February 2005, as most people were sleeping, a wall of waste collapsed on more than 80 houses surrounding the Leuwigajah landfill in the Greater Bandung area, killing 157 people. Prior to the incident, Bandung had been dumping almost 4,000 m^3 of mixed waste in Leuwigajah since 1987, contributing nearly 90% of total waste disposed in the landfill. The February 21 tragedy is now commemorated as National Trash Awareness Day (Hari Peduli Sampah) to raise awareness about the waste management crisis.

Three years after the incident, Indonesia enacted the Waste Management Law of 2008 (No. 18/2008) with an intention to change its waste management from a collect-transport-dump scheme to a more integrated system that incorporates collection, sorting, recycling, and waste processing. Cities like Bandung, however, struggle with the new system and growing waste generation, resulting in congested community TPS (temporary waste storage stations) and landfills, as well as increased waste collection costs.

Implementing the waste management law is not as easy as it looks. First, there is no agency solely responsible for waste management. Second, the law highlights the need to sort waste, but does not prescribe enforcement strategies. Third, community structures like the kelurahan or village or rukun warga (RW) do not have the resources and the authority to require residents to sort their waste at source.



BANDUNG CITY WEST JAVA PROVINCE

Land Area:	167.67 km^2
Population (2015):	2,575,478
Waste Generation:	.23kg/person/day

A resident pours kitchen waste into a biodigester. © MOKHAMAD ERY BUKHORIE

BANDUNG CITY

Home to 2.5 million people, Bandung City produces roughly 1,600 tons of waste per day. With no waste segregation system, the city at minimum spends USD 6.8 million (IDR 96 billion) to bring most of its waste to the Sarimukti Landfill. Costs are projected to increase from USD 12 (IDR 165,000) per ton per day to USD 31 (IDR 431,000) in 2022 when Bandung moves its waste disposal farther from the city to the Regional TPA in Legok Nangka. This does not yet account for the cost to handle the ashes that come out from Legok Nangka, and its monitoring cost, since it will be using thermal technology. Moreover, Bandung can only send 1,200 tons per day of its waste to Legok Nangka. The other 400 tons per day have to be managed inside Bandung.

In addition, Bandung's transfer stations can only accommodate about 40% of the city's waste. Adding pressure to Bandung and other cities in Indonesia is President Regulation No. 97/2017 — National Waste Management Policy and Strategy (kebijakan dan strategi pengelolaan sampah). The national policy seeks to manage 100% of waste by 2025, 30% by reduction and the remaining 70% should at least be handled safely.

The existing waste management in Bandung consists of two levels. At the kelurahan, residents independently manage household waste collection by paying a waste collector to take their discards and bring them to a TPS (transfer station). From the TPS, the Bandung City government uses trucks to transport collected waste to the TPA.

However, not all wastes are captured by this system. Not all RWs in Bandung City have waste collectors, leaving residents with no choice but to dispose their waste in the streets, rivers, or open dumps. Moreover, several waste collectors reportedly burn waste because there are no transfer stations in their communities. In other cases, the absence of a mandatory sorting policy at the kelurahan or RW level encourages residents to simply refuse segregating their waste.

The collection of mixed waste is costly and time-consuming for the city. If the city would reduce its waste, then a mixed waste will be brought to the TPS to be sorted manually, exposing waste workers to hazardous materials. In addition, compost produced in the TPS is of low quality due to likely contamination from other waste materials and heavy metals such as lead.

Bandung City Mayor Oded Muhammad Danial inspects a composting facility in the city. © YPBB

Table 1. Waste Generation in Selected Bandung City RWs (in kg)

Waste Generation	*Sukaluyu*	*Babakan Sari*	*Gempol sari*	*Lebak Gede*	*Average Waste Generation*
Per Household/Day	*0.889*	*0.745*	*1.003*	*0.950*	0.896
Per Household/Week	*6.223*	*5.215*	*7.021*	*6.653*	6.278
Per Person/Day	*0.243*	*0.218*	*0.271*	*0.213*	*0.236*
Per Person/Week	*1.701*	*1.526*	*1.897*	*1.491*	*1.653*
Population Per Area	*18,958*	*40,949*	*24,023*	*16,322*	

With the implementation of YPBB's waste management program, Bandung City can potentially reduce its landfill-bound waste by 73%, based on the composition of the city's household waste. More than half of household waste in the city, or 57%, is organic waste. Recyclable

Table 2. Household Waste Classification in Selected Bandung Kelurahan (in %)

Material Class	Sukaluyu	Babakan Sari	Gempol Sari	Lebak Gede	Average
Compostable	57.09	50.8	63.34	55.33	56.64
Recyclable	14.51	18.0	12.45	17.89	15.71
Residuals	12.21	20.08	14.6	15.73	15.66
Residual – Special	13.9	7	7.98	8.44	9.33
Hazardous	2.53	4	1.62	2.60	2.69

materials is 16% while the remaining 27% is residual waste. Organic waste can be processed at home, in community composting facilities or TPST 3R (city-level recycling stations), while recyclables may be sold by garbage collectors for additional income.

Given this data, theoretically, Bandung can reduce 73% of its waste to only around 450 ton per day, which should also mean 73% reduction in cost. Despite the high potential for waste reduction, however, Bandung can only reduce its future cost to around 23%, or around USD 3 million per year. The Zero Waste model that is developed in Bandung, will be a model to show a better alternative: on how much actually cost reduction it can achieve, while at the same time increase the quality of life of, specially, the community and the waste collectors.

BRINGING ZERO WASTE TO BANDUNG

In 2013, YPBB and local partner organizations organized a public forum Waste-Free Bandung Champion (Bandung Juara Bebas Sampah) to highlight the need to reduce landfill-bound waste through waste segregation at the source. It initiated a pilot project with Bandung City by introducing an at-source segregation program for 25 houses. YPBB, however, observed gaps in the program that kept participation low despite the numerous education campaigns.

YPBB later met Mother Earth Foundation, which has been training cities in the Philippines on how to develop their Zero Waste programs. In their approach, summed in the "10 Steps on How to Establish a Community Ecological Solid Waste Management Program," Mother Earth Foundation focuses on strengthening the role of the barangay or community in waste management.

"Let us begin to segregate our waste from home because if the house clean, it is for our own comfort. Not others. Producing waste is fast and easy. It only takes a few minutes to purchase and discard things.But the waste problem after that, is very long if we do not care, so let's sort the garbage from home.

"Let's work together in this waste segregation program. Please do not mix the waste after it is segregated."

Mr. Tisna Mulyana,
Chairman of RT 7 RW 09 Sukaluyu

YPBB adopted this approach in four kelurahans: Sukaluyu, Babakan Sari, Neglasari, and Cihaurgeulis, with seven RWs practicing waste segregation in households, door-to-door waste collection, and composting of organic waste. In a year, these pilot sites achieved a 44% compliance rate among households, one of the highest in Indonesia. To date, the Zero Waste Cities program is present in 41 RWs in Bandung.

Sukaluyu, one of Zero Waste model kelurahans in the city, manages a network of community-scale composting spaces, capturing almost all organic waste in the village. The Bandung City Environmental Agency recognized Sukaluyu for its composting activities, which demonstrate that waste management does not necessarily come with a foul smell if properly implemented. Likewise, Bandung envisions to manage 60% of organic waste within the confines of the city.

YPBB, however, cautioned about celebrating early for Bandung, saying that the compliance rate is very much dependent on informal processes, mostly from commitments of community leaders and active participation of residents. To support waste collection services in the 41 RWs, residents pay user fees to subsidize the salaries of waste collectors. YPBB is confident that active participation from residents will improve once Bandung has defined its policy on kelurahan-level waste management.

Nonetheless, residents and waste workers alike feel proud of the Zero Waste program. Mang Ajang (Tatang Suhardiman), a waste collector in RW 09 Sukaluyu, said his clothes no longer smell after collecting garbage from households. Sukaluyu resident Hj Saminah, meanwhile, encourages household members and neighbors to sort their waste at home because everyone is responsible for what they consume.

NEXT STEPS: KANG PISMAN AND NEW ZERO WASTE REGULATION

Shortly after his election, Bandung Mayor Oded M. Danial launched its flagship program Kang Pisman, which is short for Kurangi (reduce waste), Pisahkan (separate), and Manfaatkan (reuse). Kang Pisman is also personified as a Sundanese mascot wearing traditional clothing so people can easily become familiar with the Zero Waste program. Under the Kang Pisman, Bandung has identified eight kelurahans to become Zero Waste areas (Kawasan Bebas Sampah or KBS).

Complementing Kang Pisman is a new waste management regulation, Peraturan Daerah Kota Bandung No.9 Year 2018, which defines the role of the city government in waste sorting, collecting, managing, transporting, and final processing. At kelurahan level, YPBB has helped villages develop their waste management plans to complement the new city regulation, which hopefully can improve participation among households and waste collectors.

To address residual waste, YPBB and Gerakan Indonesia Diet Kantong Plastik (GIDKP) has recommended Bandung City to impose levies on single-use plastic. They also suggested requiring businesses to invest in alternative delivery systems such as refilling centers or packaging-free products. In 2019, Bandung City enacted regulation on plastic bag reduction.

The city's current resources remain a challenge to fully adopting Zero

2005 Landslide of Leuwigajah Landfill, killing 157

2013 Forum Bandung Juara Bebas Sampah, FBJBS (Bandung Zero Waste Champion Forum) conducted a workshop on waste management

2015 Bandung City Environmental Agency initiated Waste-Free Area Program

YPBB di
compos
lifestyle
with init
houses

Waste. It will take at least two years to realize increased funding to support kelurahan-level Zero Waste programs. YPBB hopes for the government to take over payment and management of all waste collectors in the city. Nonetheless, commitments towards a Zero Waste Bandung is a much-appreciated response to achieve 2025 national waste management policy and strategy targets.

NOTES

1. A Filipino political term for a community or village.
2. Percentage of households that properly sort their waste at source

Waste workers during one of their regular segregated waste collection. © MOKHAMAD ERY BUKHORIE

2016

d trainings on
ting, Zero Waste
, and Takakura Clinic
ial 25 targeted
of women's group.

2017

Waste-Free Area Program adopted a mascot to make it easier for people to recognize it. It is called Kang Pisman.

GAIA came to Bandung. A meeting with government officials was held to discuss about incinerator.

YPBB broadened the scale of the program from just 25 houses to Kecamatan Cibeunying Kaler.

2018

YPBB and GAIA met with the newly appointed Mayor of Bandung and invited him to the Philippines to see the Zero Waste program being implemented in the Philippines.

The Mayor of Bandung visited the Philippines and met with the Mayor of the City of San Fernando, Pampanga, the first city in the Philippines to implement city-wide Zero Waste program.

The Mayor of Bandung pledged the Kang Pisman Program as his 100 days flagship program.

KANG PISMAN
Paving the Way to a Zero Waste Indonesia

Unit 330 Eagle Court Condominium, 26 Matalino St.,
Barangay Central, Quezon City, Philippines
www.no-burn.org | +63 2 436-4733
Facebook: @GAIAAsiaPacific | Instagram, Twitter: @zerowasteasia
Authors: Fictor Ferdinand and Jessisca Fam

ACKNOWLEDGEMENT

GAIA is grateful for the contributions from Mother Earth Foundation and the City Government of Bandung City. The Bandung City Zero Waste program is part of the Zero Waste Cities project — an initiative coordinated by GAIA Asia Pacific and funded by the Plastic Solutions Fund (PSF) and the United States Department.

This publication was funded by a grant from the United States Department of State and the Plastic Solutions Fund. The opinions, findings and conclusions stated herein are those of GAIA and the author and do not necessarily reflect those of the United States Department of State and Plastic Solutions Fund.

Gift of the United States Government