

PIONEER

OF ZERO WASTE

The Village that Inspired Cities to Go Zero Waste



ZERO WASTE CITIES ASIA SERIES

Fort Bonifacio, Taguig City, Philippines



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Fort Bonifacio is renovating a portion of its materials recovery facility

Barangay Fort Bonifacio in Taguig City, Philippines, lies only a few kilometers away from the glitz and glamour of a world-class development with modern office and residential towers and upscale shopping malls – Bonifacio Global City. It seems like a world away, with its simple houses and establishments. Yet its narrow lanes are clean and free of litter. Outside the business district, its residents, mostly coming from low-to-middle income families, have shown remarkable progress in the fight against waste. Today, 95% of its households segregate their waste before it is collected.

It was not always this way. Not too long ago, a vacant lot on one of the main thoroughfares had gained notoriety as a dumpsite for heaps of mixed waste from other barangays in Taguig as well as its affluent neighboring city, Makati. Four trucks would come every day just to collect the wastes to bring to landfill. The situation was untenable, and had to stop.

GETTING STARTED

The youngest barangay in the city of Taguig City, Barangay Fort Bonifacio was only created in 2009, having broken off from another barangay, West Bicutan. It was a beginning that was full of promise: its chairman, Lito Cayetano, had a vision that his barangay would uphold the national law (Republic Act 9003) requiring the proper segregation and disposal of



*Barangay Fort Bonifacio (TAGUIG CITY)
NATIONAL CAPITAL REGION
Population: 11,739 (2015 census)
Land area: 2.4 km²
Population Density: 4,891/km²
Waste Generation: 0.32kg per capita per day
Waste diversion rate: 80%*



to improve handling of residual waste. © MIKO ALINO

City, one of the early implementers of source separation; and Teresa, Rizal, a municipality just outside of Metro Manila, which replaced its dumpsite with an eco-park. Through these examples, they began to imagine which elements they could import to Fort Bonifacio.

They then proceeded with a self-assessment, visiting each of the barangay's eight zones to scope out problem areas where waste accumulated. To understand residents better, they conducted a baseline survey to delve into solid waste practices and perceptions.

The next step was to conduct a Waste Analysis and Characterization Study (WACS) to identify the kinds of waste produced by households, quantify this, and analyze which dominate the barangay's waste stream. Moreover, the WACS establishes important baseline information, which facilitates the task of monitoring the barangay's progress in waste management.

The results of the study paint a picture of the volume and characteristics of the total waste generated by the barangay. An important finding was the waste generation per capita: each resident produced 0.32 kg per day on average, translating to some 4.47 tons a day for the barangay's 13,594 residents. Data from WACS is likewise useful

in determining strategies and opportunities for solid waste management. To illustrate, organic waste comprised 40% of the total, representing the amount that could easily be composted and converted into fertilizer, and thus diverted from landfill. Recyclables made up a third. All in all, the WACS underscores that there is value in waste. Again, capturing that resource value entails segregation at-source and the prevention of contamination or waste mixing with one another.

SETTING THINGS IN MOTION

Policies. There is nothing like local legislation to set the project wheels in motion. In 2012, the barangay passed an ordinance in full compliance with the national law on ecological solid waste management. This ordinance formally established the barangay ecological solid waste management program, mandating correct segregation, collection, recycling, and disposal, as well as a materials recovery facility (MRF) site for the barangay. In subsequent years, the ordinances were updated to respond to new developments.

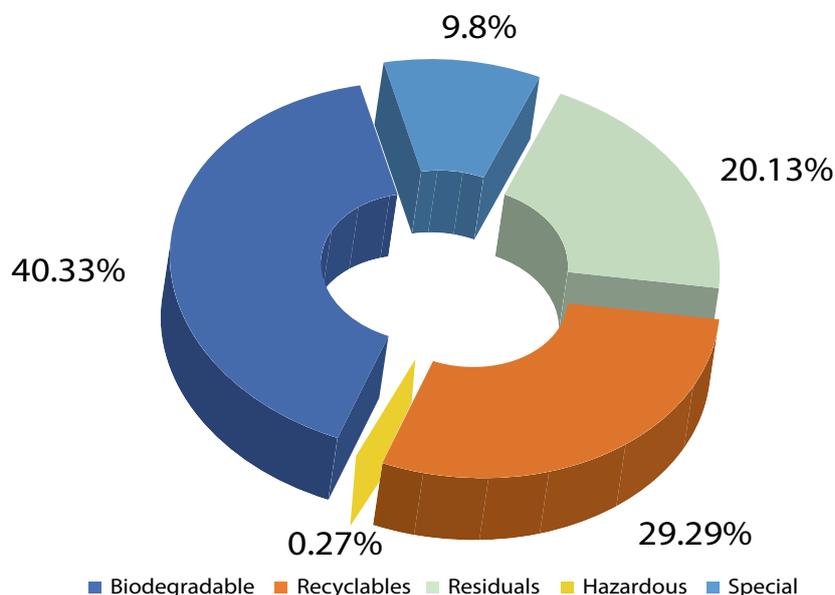
Informing and persuading. The cooperation of diverse stakeholders is integral to the success of the

waste. But alongside this promise were challenges. It had limited resources, for one. They needed to rely on the city government for waste collection, and on the residents for donations to cover collectors' wages.

The barangay officials sat down to work. They knew where they wanted to go and what they wanted to be, but the bigger question was how to start. With the help of Mother Earth Foundation, they embarked on a project that would help Fort Bonifacio address the burgeoning issue of solid waste.

Visits to model sites on solid waste management in three barangays around the country enabled the officials to witness for themselves how other communities have succeeded in creating change: Barangay Bagumbuhay in Quezon

Results of WACS: Waste Composition in Brgy. Fort Bonifacio (2012)



Source: Mother Earth Foundation (2012)



Froilan Grate, regional coordinator of GAIA for Asia Pacific, discusses to the participants of the first ever Zero Waste Academy organized by GAIA Asia Pacific and Mother Earth Foundation, how this composter works. © GAIA/THEEBAN GUNASEKARAN

project: senior citizens, junk shop owners, zone leaders, barangay health workers, street sweepers, and barangay officials themselves. Above all, it was paramount that the residents wholeheartedly accept their new role as the frontline in waste management by segregating waste in their homes. But first, they needed to understand what the role entailed, and why it was crucial.

MEF and community organizers, together with volunteers from the University of the Philippines, knocked on every household to distribute brochures on the program while carefully explaining the contents. If the residents had no questions, they were asked to sign an acknowledgement copy. This served as evidence that they received the brochure and thereby agreed to support the barangay's program. In this way, they could not feign ignorance later on.

In addition to the brochures, the barangay's slogan "Tapat mo, linis mo" (Clean up the portion of your street fronting your home) emphasized stewardship over their surroundings.

Getting the right people. The ordinance stipulates the creation of a team to support operations and enforcement of the law. In Fort Bonifacio, this cadre comprised several groups. At the helm is the committee chairman of solid waste management and environmental protection, who is an elected councillor. As the "eyes and ears" of the project, the influential community organizers regularly engage with households and monitor the collection of sorted waste. At the same time, they have an intimate knowledge of the community. They are responsible for the garbage in the MRFs, wherein they weigh garbage and manage the organics, recyclables, and residuals. Eco-aides collect strictly segregated wastes and monitor project implementation. They report erring residents to the environmental police, who enforce the law. The project team underwent training on solid waste management, courtesy of MEF.

Establishing the MRF. The project team, together with volunteers, cleaned up the infamous dumping area

for residential and commercial mixed wastes. They built a fence enclosing the site, and added a shed and pathway. As a final touch, they created a garden, thus transforming the site into the MRF and eco park.

IMPLEMENTATION AND ENFORCEMENT

The barangay's eight zones trialed the collection of segregated wastes one by one, with a one-week grace period to get it right. When the project went into full operation, eco-aides would collect the waste every day, but organic wastes and recyclables would be separately collected as a matter of course. Once segregation was established, hauling trucks would no longer be allowed to enter the barangay, except at the MRF.

Residuals are brought in color-coded sacks for easy tracing of the waste's origin. Special waste, particularly diapers and feminine hygiene products, are placed inside bins to contain the odor. A hog-raiser provided blue drums for kitchen wastes, which he would collect and in turn use as feedstock. The

remaining kitchen and yard waste would be composted. The resulting compost or organic fertilizer is sold for extra income.

However, things did not immediately proceed as planned.

EARLY CHALLENGES

Despite the project team's tireless efforts, getting people on board was an uphill battle. Some residents refused outright to segregate waste. Project staff encountered some arrogant residents seeking to intimidate and assert their power, such as the man who brandished his *bolo* (knife) at an eco-aide, and the retired army officer who burned his garbage in defiance of the changes.

There were also recurrent complaints from the people, fuelled by the persistent belief that sorting waste was not their responsibility and was the government's, as they paid taxes anyway. People had gotten accustomed — and entitled — to mixing wastes in the bin. Peace and order security officials helped eco-aides deal with bullying. Meanwhile, the team

observed that some barangay staff and street sweepers themselves were not segregating waste properly.

The team persevered with a twin-pronged approach. The soft approach relied on patiently explaining to people the implications of the new ordinance, and that they were merely complying with what's mandated in the national law. Non-compliant households would receive an "IEC intervention" and would have to sit through another orientation on the program.

In contrast, the hard approach consisted of enforcement to demonstrate that the barangay meant business. The environmental police would dutifully summon residents with violations — such as burning, or paying someone to dispose of one's own waste — to the barangay outpost to discuss their cases and record their names in the barangay blotter. Apologies would be accepted but the cases would be pursued. By signing the blotter, wrongdoers would signify their commitment to support the program. Fines were levied for offenses: P500 (USD 10) for the first offense, P1,000 (USD 20) for the second, and P1,500 (USD 30) for the third.



Compost from the organic waste is used as natural fertilizer for the plants in the eco-park. © GAIA/THEEBAN GUNASEKARAN



Waste workers store collected wastes in the materials recovery facility. © MIKO ALINO

A HOPEFUL LOOK AMID CHALLENGES

It has been eight years since Barangay Fort Bonifacio began its journey towards Zero Waste. The most evident impact of the project is the complete transformation of the dumpsite into a park that people can visit and enjoy. Gone are the days when residents would ride a jeepney merely to avoid the one-kilometer foul-smelling stretch. Residents and leaders alike are delighted with this, as well as the project's other results.

Barangay Fort Bonifacio reached a milestone when it became a model community for solid waste management, inviting others to learn from its experiences. At least five barangays in Taguig have introduced door-to-door collection, while students from the school next door are learning how to segregate first-hand and applying this knowledge in their own homes. As an eco-tour site, it has drawn many visitors inspired by their story, including representatives from 22 municipalities and cities of the province of Pampanga

There is a community-service option to participate in clean-ups of the creek. But the barangay not only focused on incidents, but also non-incidents (suggesting non-compliance): if a household had no waste to dispose of within two days, they would also be summoned. It took about six months for the residents to see reason and accept the new state of affairs.

While the barangay was addressing these internal issues, it also needed to respond to the continual dumping of unsorted wastes at the MRF site from outsiders in the

week hours of the morning. Their plan involved vigilant surveillance, using closed-circuit television (CCTV) cameras and rotating schedules for the security officers. Eventually, they succeeded in ending this covert practice.

2009

Brgy. Fort Bonifacio separates from West Bicutan to become the City of Taguig's youngest barangay

2011

MRF is fully operational

Study visits to barangays with best RA 9003 practices: Barangay Bagumbuhay, QC; Teresa, Rizal; and Puerto Prinsesa, Palawan)

2012

MEF trains barangay officials and project staff on WACS and ESWM

MEF and Brgy Fort Bonifacio formally launch ESWM

Brgy. Fort Bonifacio ink partnership with MEF on ESWM

Brgy Fort Bonifacio passes ordinance on waste segregation and waste reduction



Among these, the City of San Fernando, Pampanga took up the gauntlet and is now itself a model city that continues to inspire others.

The program faced a two-year slump in implementation when the barangay leadership and key priorities had changed. Project staff remember this period of weaker enforcement. Some residents, who had become over-reliant on street sweepers and the environmental police, had begun to slip back to their former non-segregating ways.

Today, as Rap Villavicencio of MEF notes, some residents remain complacent. Much to the chagrin of project staff, the waste diversion rate has declined as recyclables are increasingly being contaminated with mixed wastes. Its waste diversion rate today is 80% — around the same level as other Zero Waste models like San Fernando, Philippines, or Kamikatsu, Japan.

Nonetheless, these struggles are simply an inherent part of the journey. While it is true that support is needed from above, Fort Bonifacio testifies that when a community deeply understands the importance of safeguarding their environment, of which waste management plays a central role, they will rally to the cause. Having a strong policy, coupled with the dedication of residents, community organizers, and eco-aides, has helped the barangay pull through.

As of June 2019, Fort Bonifacio boasts a 95% household compliance rate. Waste diversion serves as an indicator for both income — as recyclables are sold — and project success, insofar as most residents continue to segregate. This has resulted in more efficient use of Taguig City's budget, saving PHP 800 (USD 15) per cubic feet. As the number of dump trucks dropped from four in 2012 to one per day in 2013, just a year after the project began, hauling expenses have similarly been slashed by three-fourths, from PHP 7.3 million

(USD 141,200), to PHP 1.825 million (USD 35,300) per year.

So it is that today, the political tide has turned once again in favor of solid waste management champions. The barangay is getting back on track. The expected completion date for the MRF is 2020. They are exploring how to raise incentives for eco-aides, such as by persuading junk shop owners to pay eco-aides a premium, and by introducing a new livelihood component.

Lino Cayetano, who initiated solid waste management for the barangay, now sits as city mayor. In this new role, his clear vision for Barangay Fort Bonifacio has expanded into one of Taguig City as a Zero Waste city. Already, plans are being made to bring Barangay Fort Bonifacio's model to the city's other barangays, to be matched by the necessary resources. It augurs well for Barangay Fort Bonifacio to take the path of Zero Waste with its neighbors.

2013

Launch of MRF and Eco-Park during Earth Day

Barangay Fort Bonifacio achieves compliance rate of 95%

2014

Ordinances are revised

2015

Receives award from MMDA Barangay Power 2014 (Category B)

Receives award from EcoWaste Coalition

2019

Reconstruction work begins on MRF

Residents who are found not complying with the waste segregation policy are required to render community work (e.g. clean up waterways) on the first offense. © MIKO ALINO



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