

Manila's Garbage Pandemic

The Potential of Dealing with Waste on a Local Level



Cassandra Alves, Toronto, Canada.

Sustainable Urban Design Masters Student, Lund University.

Introduction

After weeks of roaming through the chaotic yet vibrant streets of Manila, the subtle ingenuity and resourcefulness embedded within the Filipino culture became truly eminent. The bustling, frenzied Jeepneys; a creative mode of public transportation, transforming US military jeeps from World War II. Scavengers, rag collectors and push cart boys rummage through the trash, collecting recyclables and profitable goods. Filipino women deconstruct used plastic bags and rags, weaving them into charming purses and wallets. Canopies float above doorways; repurposed from old banners and dated advertisements. Plastic coke bottles line streets and hang off balconies replacing pots to grow vegetation. This idea of upcycling is obvious within their way of life, yet a large majority of the population is living and breathing amongst heaps of unmanaged garbage throughout the sixteen cities of Metro Manila.

Worldwide there is an unfortunate reality of overconsumption, producing more waste than our environments can withstand. The only difference is in developing cities such as Manila, the capital of the Philippines, there is an inability to conceal such inefficiencies in waste management. This mismanagement contributes to environmental degradation, engulfing valuable land, proliferating disease, and perpetuating a lack of care within neighbourhoods. With intentions to investigate Manila's waste management, successful local community initiatives have surfaced. However, do these small-scale initiatives have the potential to be sustained and further developed and how can architects and planners promote this change in the larger, city-scale of Metro Manila?

1. Factors Shaping Urban Shelter Design

Manila's extensive history in managing waste dates back to 1991, when the Smokey Mountain dumpsite was closed due to frequent fires resulting in the deaths of inhabitants in and around the area. Since then, this pattern has persisted and both landfills and dumpsites continue to incur deaths, leachants, and collapses. With recent attempts to get this waste management issue under control, The Ecological Solid Waste Management Act (RA9003) was established on January 26, 2001. This was created as a comprehensive strategy to deal with solid waste management encouraging segregation at the source, collection, storage, transfer, processing, treatment, and disposal of solid waste.¹ Unfortunately after twelve years of implementation, the act has perpetuated little improvement in the ever-growing trash crisis in Manila. A recent statement in the Manila Times made by Socioeconomic Planning Secretary, Arsenio Balisacan declares that it boils down to financial insufficiencies and the lack of willingness in Local Government Units (LGUs). He continues in the article, elaborating on the capital cost confining the local governments' ability to invest in the improvement of waste disposal sites and the establishment of recycling facilities.²

Aside from financial discrepancies, there are other issues contributing to the poor commitment in waste reduction, such as a lack of road infrastructure. In the report for *Consulting Services for Solid Waste Management in Metro Manila*, there is said to be a total of forty seven inaccessible areas in eighteen barangays in Quezon City³. Garbage trucks are physically unable to reach narrow streets to collect weekly curbside garbage especially within areas densely populated by informal settlers. Collection schedules are also affected by the intensity of traffic in Manila, resulting in irregular pick-ups and longer waits between collecting and transporting trash. This then offsets environmental concerns regarding the pressing issue of air pollution in Manila.⁴ LGUs are also behind in establishing a separation system for wet and dry materials. This is highly problematic, when approximately 8,400 tons of garbage produced daily in Manila is comprised of 50% compostable material and 40% recyclable.⁵ This is an outrageous amount of waste that can be dealt with at a household and community level rather than overloading dumpsites

¹ *RA9003 In a Nutshell*, Tao Pilipinas. June-October 2007.

<www.tao.pilipinas.org/files/taoshelter/issue3/ra9003>

² Caraballo, Mayveln. *Many LGUs Lack Solid Waste Management Plan*. Manila Times; Web.18 Apr. 2013.

³ *Consulting Services for Solid Waste Management with Project Micropolis in Metro Manila (CSSWM)*, April 2007: 9.

⁴ CSSWM, April 2007: 9.

⁵ CSSWM, April 2007: 9.

and landfills. Witnessing the affects of such systematic inefficiencies, you could see the how deeply these communities are affected. In the Baseco area for example, while wandering in the neighbourhood one can stumble upon an overwhelming amount of garbage accumulating by the riverside. The most unsettling aspect of this image was to see children sitting in it, completely unaffected.



These over-capacitated and ill-managed dumping sites result in a variety of environmental repercussions and detrimental affects on the people who reside near such sites and who rely on waste collection as a means of income. Lack of proper infrastructure to manage rainwater, gas, and leachate are just some of the issues pertaining to landfills in Manila. Water contamination is a enormous problem when dealing with waste management as it can contaminate ground water up to eight hundred meters from dumpsites.⁶ For example in 2000 the San Mateo landfill was closed for being operated while leaking toxic leachate into a nearby creek thus contaminating the drinking water.⁷ Within that same year, the Payatas dumpsite collapsed, killing two hundred people, leaving three hundred families homeless and taking up to three days to clean up.⁸

From 2001 to 2004 additional waste management sites have been created such as the Rodriguez disposal facility in Montalban, the Tanza facility in Navotas and the Clark landfill in Capas. However these sites still propagate the same problems. According to

⁶ Anagal, Vaishali, November 2009; 243. *Sustainable Urban Solid Waste Management- A case study of Pune*. 10th National conference on Technological Trends.

⁷ The Institute for Local Self-Reliance, October 2000: 2, *Wasting and Recycling in Metropolitan Manila, Philippines*.

⁸ Alberto, Thea. *Garbage Pile Collapses at Payatas Dumpsite, No Casualties*, www.inquirer.net, *Philippine News for Filipinos*. N.p., n.d. Web. 18 Apr. 2013.

the Asian Development Bank, the Rodriguez facility excretes three million liters of leachate each year, equivalent to twenty eight Olympic-size swimming pools. This leachate then bleeds into the Marikina River system offsetting a chain of environmental consequences.⁹

Air quality is an additional concern contributing to the list of repercussions from this lack of proper waste disposal. With long wait times during the transportation of trash, the on-site arrival is no less influential in contributing to the poor air quality. The burning of remaining waste on-site and the combustion of organic waste further contribute to air pollution, having major implications on the health of inhabitants. Both air and water pollution cause many illnesses such as jaundice, nausea, infertility, miscarriages and various respiratory problems, such as asthma. Rotting waste also enables irresistible breeding grounds for flies, and this, in combination with dirty water is one of the most effective ways to transmit diseases in human settlements.¹⁰

The situation deepens as over 150,000 people live by, manage, and rummage through the trash to make a living . Waste pickers, waste management workers, and vehicle drivers are most affected by these dumpsites and landfills. The lack of garbage separation creates additional problems for over 4,300 scavengers, including children, as they are subject to injuries because of glass and metal pieces intertwined within unsorted trash.¹¹

It is obvious that since 1991, the creation of more landfills has not adequately improved the situation of waste management for the Filipino people. Smokey Mountain led to numerous fires and deaths and the Payatas collapse ended similarly nine years later. Landfills and dumpsites are evidently not the solution. With Manila spending approximately 3.8 billion pesos to dump its trash in landfills and dumpsites, it is outrageous that 95% of these materials could have been recovered by incorporating a proper waste segregation system. Ending the transportation of unnecessary waste could save Metro Manila up 3.61 billion pesos .¹² This squandered money could be better spent

⁹ Asian Development Bank, 2004: 74. *The Garbage Book-Solid Waste Management in Manila*.

¹⁰ UN-habitat, N.d :6 *Community Participation – Solid Waste Management in Low-Income Housing Projects: The Scope for Community Participation*.

¹¹ Asian Development Bank, 2004: 90. *The Garbage Book-Solid Waste Management in Manila*.

¹² United Nations Development Programme (UNDP) & the Department of Environment and Natural Resources, n.d :43, *Solid Waste Management Made Easy*.

on investing in smaller scale interventions which could promote environmental preservation, encourage proper waste segregation, and community participation to minimize this issue.

2. Design of Sustainable Shelter and Neighbourhoods

Within the report, *Consulting Services for Solid Waste Management in Metro Manila, Republic of the Philippines*, key points were outlined in order to establish successful implementation of a sustainable waste reduction program. These points included strong leadership, a dedicated Barangay captain, small-scale initiatives, empowerment work among the inhabitants, active NGOs and religious groups, and a need for financial resources.¹³ These are the main reasons as to why certain community-led waste management systems are working in Manila. Unfortunately, there are no government officials to oversee that these programs are being maintained and many have and are dissipating when lacking these key requirements. The following section describes initiatives and case studies that provide guidance and examples as to how these small scale initiatives for waste management can be implemented by various community members, NGO's and government bodies.

The Organizing and Facilitating/Training of Waste Collectors.

With 40,000 to 50,000 scavengers in Manila¹⁵ rummaging through waste for profit and working in unsanitary and hazardous conditions, the facilitation and training of waste collectors becomes a vital consideration. Attempts to legitimize this phenomenon enables people to have a designated place and safe conditions to work under. This also contributes to job creation, economic growth, and improves environmental conditions. At a neighbourhood scale, waste collectors could be given the responsibility to manage and sort these materials with provided space, allowing more efficiency and safe conditions. This also facilitates a responsibility for waste collectors within the community, assuring that they too make a difference in improving their neighbourhood.

This idea can be seen in various case studies. In Pune, India, waste is initially separated at a household level into biodegradable and non-biodegradable materials. Waste collectors go house to house gathering trash and further sort, clean, and continue on

¹³ CSSWM, April 2007: 17

¹⁵ The Institute for Local Self-Reliance, October 2000: 2, *Wasting and Recycling in Metropolitan Manila, Philippines*

selling the materials collected.¹⁶ Another initiative is to train Scavengers such as in Mumbai, India. The Stree Mukti Sanghatana (SMS), a women's liberation organization, has been working with female scrap collectors to train them in gardening and vermiculture. A designated spot was also arranged where the city's organic waste from vegetable markets are dropped off into pits built by the women. Here, they are able to convert this into manure, sell it and make a profit. The amount of material that can be collected to generate income from waste is astounding. In Peru 6,500 local waste collectors gather approximately 292,637 tonnes of recyclable material per year valuing 18.5 million USD. This has almost doubled their earnings and has saved two million trees per year.¹⁷

Community Level Composting

Community level composting is one of the biggest components to decreasing the total amount of waste accumulating in landfills and dumps. Kitchen waste is about 45% percent of all the waste produced out of a single-family household. Within low income housing areas, as much as 90% of waste can be compostable.¹⁸ Community level composting creates a huge opportunity to manage waste more effectively as a means for income generation and can reduce the need for chemical fertilizer, which can be costly. Composting can be dealt with in a variety of ways at the community level. This can be done where compost pits and composting facilities can be implemented and maintained by a certain body of people within the neighbourhood. This is seen in the previous example in Mumbai, India, where the women scrap collectors led such an initiative. Another example comes from Cebu City in Manila where some barangays have established composting schemes where waste is segregated by the residents and markets. This organized waste is then collected by waste collectors and brought to a facility near by where vermicomposting takes place. As a full cycle system, this compost is then sold at the barangay.¹⁹

¹⁶ Anagal, Vaishali, November 2009; 244. *Sustainable Urban Solid Waste Management- A case study of Pune*. 10th National conference on Technological Trends, College of Engineering.

¹⁷ Vaggione, Pablo, UN-HABITAT, n.d :80, *Urban Planning for City Leaders*, Nairobi, UNON Publishing Services Section. ISBN Number: 978-92-1-132505-8

¹⁸ UN-habitat, N.d :8 *Community Participation – Solid Waste Management in Low–Income Housing Projects: The Scope for Community Participation*.

¹⁹ Premakumara, D.G.J, Research Group for Alternative Development Inc. 2010:7. *Best Practices and Innovations in Community Based Solid Waste Management in Cebu*

An interesting collaboration to highlight is one between a barangay and Piggery in Quezon City. The city approved a collection vehicle which roams around barangay Pinagkaisahan three times a week to pick up organic waste to feed pigs. This situation is a great example of how systems can work in unison; the organic matter does not end up as residual waste, the piggery gets free scraps, and the barangay benefits from reducing the number of truck loads to the dumpsite ²⁰

Providing Incentives

The most successful examples of providing incentives for community based recycling and waste reduction is in Curitiba, Brazil, where 70% of the cities trash is completely recycled. The city has established, the “green exchange” employment program, where families living in slums unreachable by trucks bring their trash to a neighbourhood center where they can exchange trash for food and bus tickets. To encourage children to actively participate in the recycling, kids receive incentives like chocolate or toys for keeping waste in order in various schools.²¹

An alternative incentive based system is something called the PAYT “Pay-As-You-Throw” project. This system simply charges more for collection, when you have more waste to dispose of. Currently in Manila, the cost of trash collection is financed from local governments and generated from local taxes. However this type of program could be utilized if LGUs were taxed when disposing a certain amount of waste. This would force municipalities to implement a solid waste management plan within the barangays in order to avoid paying a disposal tax. ²²

These options are great alternatives to mobilizing a community to manage their waste accordingly. Providing motivation to encourage people to recycle or even reduce their consumption habits also enables education to occur as well. A prime example can be seen with children developing these habits at an early age, where they begin to encourage their families to do the same. This creates a chain affect on a household spreading the message of proper waste management, benefiting both the individual household and the community.

²⁰ CSSWM, April 2007:35

²¹ Macleod, kristeen, 2002; 3-4, International Council for Local Environmental Initiatives. *Curitiba Orienting Urban Planning to Sustainability*, Canada.

²² The Institute for Local Self-Reliance, October 2000: 2, *Wasting and Recycling in Metropolitan Manila, Philippines*. Pg 13

Educational Programs

Educating children is one of the most important objectives to explore when attempting to alter people's poor waste management habits. Schools can benefit through saving money on waste disposal and children are learning and bringing that knowledge into practice, influencing their households. In the Philippines, programs are already being utilized to educate children about recycling and waste management, specifically Puerto Princesa in Palawan. The Oplan Linis program focuses on the accessibility of information and educational campaigns to instill the importance of a clean environment. The program works intensively with schools, churches, and NGO's dealing with an anti-littering campaign having children as their primary target audience.²³ Organized seminars are another means for targeting school children in waste management objectives. The Metro Manila Council of Women Balikatan Movement, Inc. has developed an education program for children which resulted in establishing model schools where children convert food waste into compost for use in the school gardens.²⁴

Proper Sorting & Separation

Sorting and separation is an important implementation resulting in positive affects, if done properly. Considering 40% of waste in an average Manila household is recyclable, this can have drastic affects on reducing the amount of residual waste. An approximate breakdown of the waste produced in Manila from *The Consulting Services for Solid Waste Management in Metro Manila* is depicted below.



²³ The Institute for Local Self-Reliance, October 2000: 11, *Wasting and Recycling in Metropolitan Manila, Philippines*.

²⁴ The Institute for Local Self-Reliance, October 2000: 12, *Wasting and Recycling in Metropolitan Manila, Philippines*.

This data implies that the majority of this waste can be easily dealt with either being composted or separated for collection. This can be done at the household level, arranged through a pick up service in co-ordination with waste collectors, or it can be dealt with in small scale facilities at the neighbourhood level.

San Juan, and Paranaque City in Manila portray great examples as to how sorting and separation can encourage positive waste management within a community. Separation commences at the household and school level within the Linis Ganda program in San Juan. Participants first segregate their materials based on wet and dry materials, where then waste collectors visit each household with push carts purchasing the recyclables. The community further attempts to perpetuate recycling habits through social awareness, as they organize street cleaning campaigns and install posters and signs promoting cleanliness and environment conservation.²⁵ Similarly in Paranaque City the 1618 Sunflower Green program, initiated a program with scheduled collection for recyclables, residuals, kitchen and garden waste. Non-residual waste is brought to a site designated to hold collected and separated materials until recyclables are sold or waste is composted. On average the community manages to sell 15,000 pesos worth of recyclables every month and has saved 70,000 pesos a month in private hauling fees.²⁶

Targeting Local Knowledge-Trash into Crafts.

Inspiration through local craft is the final consideration in reducing the amount of litter within a community. Repurposing waste and recyclables into crafts can not only reduce the amount of residual waste but also creates an alternate means of income for women. The Good Shepherd Sisters of the Philippines created the Alay Kapwa project, capitalizing on this opportunity, teaching women how to crochet, sew and handcraft bags out of recycled materials, coconut and shells.²⁷ The act of reusing trash then becomes a catalyst not only for waste reduction and income generation, but enables more tight-knit community with increased social interaction amongst its members.

²⁵ The Institute for Local Self-Reliance, October 2000: 14, *Wasting and Recycling in Metropolitan Manila, Philippines*.

²⁶ United Nations Development Programme (UNDP) & the Department of Environment and Natural Resources, n.d :49, *Solid Waste Management Made Easy*

²⁷ *Filipino Designers Build a Global Crafts Business with a Sustainable Twist*. Fondazione Buon Pastore. Good Shepherd International Foundation, n.d. Web. 19 Apr. 2013.
<<http://www.fondazionebuonpastore.org/progetti/filipino-designers-build-global-crafts-business-sustainable-twist>>

3. The Role of Architects

The overwhelming amount of information available on how waste can be successfully managed through such community initiatives as repurposing, segregation, and social participation is astounding. What then becomes frustrating is the lack of involvement, implementation, and consideration on both a governmental and design level. There are clearly prevalent community based initiatives within Manila, however there is a necessity for designers and architects to help maintain this ingenuity and further perpetuate these habits through their designs. The integration of this awareness within architecture, infrastructure, and urban planning are vital to proliferate strong self-sufficient communities which, as previously outlined, can work. A more meticulous consideration of land use and how spaces can be created, promoting recycling, composting, and segregation on both household and neighbourhood levels are crucial. Developing an acute awareness on how people are currently dealing with waste within a neighbourhood and investigating those social structures can further induce a more sensitive application in the design process. This is especially true in the example of involving waste collectors, as in many cases they can be integral catalysts in the organization and reduction of waste.

Within a household, buildings can be more integrated with waste separation providing adequate space to enable this management on an individual level. Incorporating separation systems within the structure, or simply just providing bins as part of the design budget becomes an opportunity. High density buildings can also aid with the organization of waste, where it decreases stops for garbage trucks enabling a deduction in transportation costs and unnecessary pollution. This also adds another level of involvement in waste, where trash can be managed on a unit level and then on building level, together as a community. Considering how waste flows from an individual unit to the building, to the neighbourhood and into the city can help guide a designer to integrate a system through small scale, step by step processes. It is up to designers to encourage and create healthy neighbourhoods and homes, being sensitive as to how certain communities function and improving living conditions on the architectural level and planning level. It is not enough to just provide more buildings as quickly as possible to solve the lack of housing crisis. It is not enough to just provide more open space for people to have access to.

Jermei Lerner, the former mayor of Curitiba and practicing architect proves to be a living example that architects can contribute successfully to waste management, especially in financially strained cities like Manila. It is truly just a matter of implementation, priority and responsibility. *“Every city in the world can be improved in less than three years, it is not a question of scale, it is not question of financial resources. Every problem in the city has to have it’s own equation of core responsibility and also design”* (Jamie Learner)

