



Philippine Solid Wastes At A Glance



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Solid waste¹ management remains a major challenge in the Philippines especially in urban areas like Metro Manila. Improper wastes disposal, inefficient wastes collection and lack of disposal facilities are among the dominant concerns in the country's solid waste management. Unless these are addressed, the wastes generated from various sources will continually lead to health hazards and serious environmental impacts such as ground and surface water contamination, flooding, air pollution and spread of diseases.

Republic Act No. 9003 otherwise known as the "Ecological Solid Waste Management Act of 2000, enacted on January 26, 2001, aims to address the growing problem on solid wastes in the country. It provides the legal framework for the country's systematic, comprehensive, and ecological solid waste management program that shall ensure protection of public health and the environment. It also provides for the necessary institutional mechanisms with the creation of the National Solid Waste Management Commission (NSWMC) which shall oversee the implementation of solid waste management plans and prescribe policies as well as incentives to achieve objectives of the Act.

Solid Waste Generation, Sources and Composition

Waste Generation. The Philippines' waste generation continues to rise with the increase in population, improvement of living standards, rapid economic growth, and industrialization especially in the urban areas. The NSWMC calculated that from 37,427.46 tons per day in 2012, the country's waste generation steadily increased to 40,087.45 tons in 2016 with an estimated average per capita waste generation of 0.40 kilograms per day for both urban and rural. The National Capital Region (NCR), as expected, generated the biggest volume of wastes for the past five years due to its population size, bigger number of establishments and modernized lifestyle. With an estimated population of 12 million people, Metropolitan Manila generated 9,212.92 tons per day of wastes in 2016. It is followed by Region 4A with waste generation of 4,440.15 tons per day (11.08%) and Region 3 with 3,890.12 tons per day (9.70 %) (NSWC).

Table 1. Waste Generation of the Philippines, 2012-2016 (Tons per day)

| Region | 2012 | 2013 | 2014 | 2015 | 2016 |
|--------------|------------------|------------------|------------------|------------------|------------------|
| 1 | 1,709.17 | 1,739.54 | 1,769.90 | 1,800.27 | 1,830.64 |
| 2 | 1,100.64 | 1,120.19 | 1,139.75 | 1,159.31 | 1,178.86 |
| 3 | 3,631.99 | 3,696.52 | 3,761.05 | 3,825.58 | 3,890.12 |
| 4a | 4,145.52 | 4,219.18 | 4,292.83 | 4,366.49 | 4,440.15 |
| 4b | 909.43 | 925.59 | 941.74 | 957.90 | 974.06 |
| 5 | 1,878.74 | 1,912.12 | 1,945.50 | 1,978.88 | 2,012.26 |
| 6 | 2,700.14 | 2,748.11 | 2,796.09 | 2,844.06 | 2,892.04 |
| 7 | 2,605.68 | 2,651.97 | 2,698.27 | 2,744.57 | 2,790.86 |
| 8 | 1,479.47 | 1,505.75 | 1,532.04 | 1,558.33 | 1,584.61 |
| 9 | 1,391.95 | 1,416.68 | 1,441.41 | 1,466.15 | 1,490.88 |
| 10 | 1,693.94 | 1,724.03 | 1,754.13 | 1,784.23 | 1,814.32 |
| 11 | 1,818.05 | 1,850.35 | 1,882.65 | 1,914.95 | 1,947.26 |
| 12 | 1,348.20 | 1,372.15 | 1,396.10 | 1,420.06 | 1,444.01 |
| 13 | 884.69 | 900.41 | 916.13 | 931.85 | 947.57 |
| CAR | 620.64 | 631.67 | 642.70 | 653.72 | 664.75 |
| NCR | 8,601.60 | 8,754.43 | 8,907.26 | 9,060.09 | 9,212.92 |
| ARMM | 907.64 | 923.76 | 939.89 | 956.02 | 972.14 |
| TOTAL | 37,427.46 | 38,092.46 | 38,757.46 | 39,422.46 | 40,087.45 |

Source: NSWMC

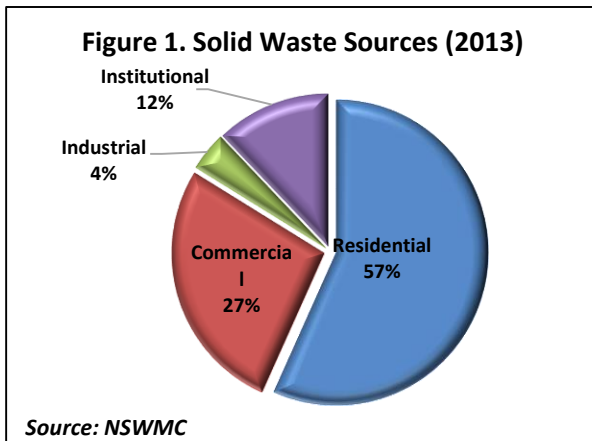
The World Bank (2012)², on the other hand, estimates that solid waste being produced by Philippine cities will go up by 165 percent to 77,776 tons per day from 29,315 tons as a consequence of a projected 47.3-percent hike in urban

¹ Solid waste refers to all discarded household, commercial waste, non-hazardous institutional and industrial waste, street sweepings, construction debris, agricultural waste, and other non-hazardous/non-toxic waste (RA No. 9003).

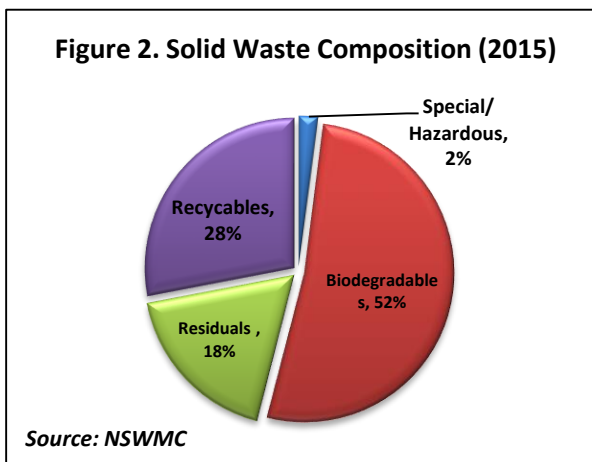
² "What a Waste: A Global Review of Solid Waste Management". World Bank (2012)

population by 2025 and a projected doubling of municipal solid waste (MSW)³ generation per capita at 0.9 kilogram per day by 2025 from the current 0.5 kilogram⁴, presenting a direct correlation between the per capita level of income in cities and the amount of waste per capita that is generated. This also indicates that the Philippines is at the low end of waste generation in the region and among countries in its income bracket.

Waste Sources. Solid wastes are generated from residential, commercial, industrial and institutional sources. Residential wastes accounts for more than half (57%) of the total solid wastes (e.g. kitchen scraps, yard waste, paper and cardboards, glass bottles, etc.) Wastes from commercial sources, which include commercial establishments and public/private markets, accounts for 27 percent. Wastes from institutional sources such as government offices, educational and medical institutions accounts for about 12 percent while the remaining 4 percent is waste coming from the industrial or manufacturing sector (NSWMC).



Waste Composition. The country's solid wastes typically contain more organic components than other materials. According to NSWMC, disposed waste is dominated by biodegradable waste with 52 percent, followed by recyclable waste which accounts for 28 percent and residuals at 18 percent. Biodegradable wastes come mostly from food waste and yard waste while recyclable wastes include plastic packaging wastes, metals, glass, textile, leather and rubber. The significant shares of biodegradables and recyclables indicate that composting and recycling have great potential in reducing solid wastes.



Current Solid Waste Management

Collection. Under RA 9003, collection, transport and disposal of solid wastes are the responsibilities of the local government units (LGUs). At present, most LGUs administer their own collection systems or contract out this service to private contractors. In Metro Manila, the common types of collection vehicles are open dump trucks and compactor trucks. Nationwide, about 40 to 85 percent of the solid wastes generated is collected while in Metro Manila it is 85 percent. The poorer areas of cities, municipalities, and rural barangays are typically unserved or under-served. Uncollected waste ends up mostly in rivers, esteros and other water bodies, thus, polluting major water bodies and clogging the drainage systems, which results to flooding during heavy rains (NSWMC). It is interesting to note, however, that the 85 percent collection rate of Metro Manila is above the average collection rate of other countries in the Philippines' income bracket (around 69%) and among East Asia and Pacific countries (around 72%).

Waste Disposal. Open dumping remains the general practice of waste disposal in the country as controlled dumpsites⁵ and sanitary landfills (SLFs)⁶ are very limited (NSWC). RA 9003 requires LGUs to close their existing open dumpsites by year 2006 and to establish controlled disposal facilities or SLFs. As of 2016, there are still 403 open dumpsites and 108

³ Per capita municipal solid waste (MSW) generation, a core indicator of environmental pressure, is a useful measure for evaluating the intensity of waste generation over time and comparing the intensities among cities or countries.

⁴ Municipal solid waste generation per capita estimate of World Bank.

⁵ Controlled dump sites are disposal sites at which solid waste is deposited in accordance with the minimum prescribed standards of site operation.

⁶ SLFs are waste disposal sites designed, constructed, operated and maintained in a manner that exert engineering control over significant potential environment impacts arising from the development and operation of the facility (RA 9003).

controlled dumpsites in operation. The number of SLFs is also insufficient to service all LGUs. While SLFs increase from 48 in 2010 to 118 in 2016, LGUs with access to SLFs remain below 15 percent. It is interesting to note that the DENR is now pushing for the establishment of cluster sanitary landfills or common sanitary landfills in the country to address waste disposal problems. Through cluster sanitary landfills, local government units (LGUs) may share funds in establishing sanitary landfills and consolidate efforts on solid waste management efforts. Through cost-sharing, LGUs can save financial resources and services. Section 13 of the Philippine Constitution provides that LGUs may group themselves, consolidate or coordinate their efforts, services, and resources for purposes commonly beneficial to them in accordance with law.

Diversion⁷ and Recovery. As of 2015, solid waste diversion rate in Metro Manila is 48 percent while outside Metro Manila the rate is 46 percent. RA 9003 requires at least 25 percent of all solid wastes from waste-disposal facilities is diverted or recovered through reuse, recycling, composting, and other resource-recovery activities. LGUs are also mandated to put up or establish several waste facilities such as materials-recovery facilities (MRFs)⁸ for processing recyclable and biodegradable waste. As of 2016, about 9,883 MRFs are in operation in the country serving 13,155 barangays (31.3% of the 42,000 barangays in the country). The NSWMC claims that LGUs are on the right direction in the compliance of waste reduction program being implemented in their respective jurisdictions.

Local Solid Waste Management (SWM) Boards. To date, there are 55 active provincial boards, 614 active city/municipal SWM Boards and 5,549 active Barangay SWM Committees. The Cordillera Administrative Region (CAR) had the highest number of active local SWM Boards followed by Region 4B. The local SWM Boards are tasked to prepare, submit and implement a plan for the safe and sanitary management of solid wastes generated in areas under its geographic and political coverage. The Barangay SWM Committees, on the other hand, are tasked to formulate SWM programs consistent with the City/Municipal SWM plan that is to segregate and collect biodegradable, compostable, reusable wastes, and to establish a MRF.

Table 2. Local SWM Boards of the Philippines (2010)

| REGION | No. of Provincial SWM Boards Created | No. of Active SWM Boards | No. of City/Municipal SWM Boards Created | No. of Active City/Municipal SWM Boards | No. of Barangay SWM Committees Created | No. of Active Barangay SWM Committees |
|--|--------------------------------------|--------------------------|--|---|--|---------------------------------------|
| National Capital Region (NCR) | 1 | 1 | 17 | 17 | 1,509 | no data |
| Cordillera Administrative Region (CAR) | 6 | 6 | 77 | 77 | 1,174 | 1,174 |
| Region 1 (Ilocos) | 4 | 4 | 9 | 9 | no data | no data |
| Region 2 (Cagayan Valley) | 4 | 3 | 64 | 49 | 917 | 473 |
| Region 3 (Central Luzon) | 7 | 3 | 130 | 34 | 105 | 105 |
| Region 4A (CALABARZON) | 5 | 5 | 123 | 86 | 3,247 | 678 |
| Region 4B (MIMAROPA) | 5 | 5 | 73 | 35 | 1,457 | 575 |
| Region 5 (Bicol Region) | 6 | 6 | 57 | 57 | 177 | 161 |
| Region 6 (Western Visayas) | 6 | 1 | 123 | 97 | 4,039 | 30 |
| Region 7 (Central Visayas) | 4 | 4 | no data | 5 | no data | 15 |
| Region 8 (Eastern Visayas) | 3 | 3 | 95 | 52 | 928 | 262 |
| Region 9 (Zamboanga Peninsula) | 3 | 3 | 60 | 50 | 1,300 | 850 |
| Region 10 (Northern Mindanao) | 3 | no data | 5 | no data | 48 | no data |
| Region 11 (Davao Region) | 4 | 3 | 46 | 28 | 1,152 | 806 |
| Region 12 (Soccsksargen) | 4 | 3 | 44 | no data | 886 | no data |
| Region 13 (Caraga) | 5 | 5 | 73 | 18 | 1,310 | 420 |
| Total | 70 | 55 | 996 | 614 | 18,249 | 5,549 |

Source: NSWMC

⁷ Waste diversion refers to activities which reduce or eliminate the amount of solid waste from waste disposal facilities (RA 9003).

⁸ MRFs include solid waste transfer station or sorting station, drop-off center, a composting facility, and a recycling facility (RA 9003).

Local SWM Plans. The NSWMC with the support of Environment Management Bureau (EMB) is currently fast-tracking the approval of all LGUs that submitted their 10-year SWM plans to ensure proper SWM systems being implemented. As of September 2017, 1,460 SWM plans have been submitted to the NSWMC Secretariat but unfortunately, only 318 SWM plans have been approved so far. According to the Japan International Cooperation Agency (JICA), one of the reasons for the slow pace of approval of SWM plans is the lack of institutional capacity by the EMB in terms of providing technical support to LGUs. The preparation of SWM plans by LGUs was expected to be supported by EMB regional offices.

Overcoming the Challenges

More than 15 years after the passage of RA 9003, enforcement and compliance with the law remains a daunting task due to technical, political and financial limitations of concerned agencies and LGUs. Majority of LGUs have yet to comply with the provisions of RA 9003, particularly on the establishment of local SWM Boards, submission of SWM Plans, establishment of MRFs, and closure of all open and controlled dumpsites.

To strengthen compliance with RA 9003, LGUs should be capacitated particularly on understanding the provisions of the Act and in formulating SWM Plans. They assisted in designing innovative financing mechanisms to undertake SWM activities instead of merely depending on subsidies from the national government. They should also be given assistance on how to access facilities offered by government financing institutions (GFIs) and in engaging the private sector in order to generate funds for SWM activities. There must be a continuing education and public awareness building to inculcate the right attitude among the people to actively participate in SWM activities and practices. Hence, the integration of Ecological Solid Waste Management (ESWM) in school curricula at all levels, which have been practiced in other countries like Japan and Singapore, is highly recommended.

It is worthy to note that the Office of the Ombudsman, in collaboration with the Department of Environment and Natural Resources (DENR)-EMB and NSWMC along with environmental groups, is currently monitoring the compliance of LGUs to RA 9003 through its Solid Waste Management Compliance Program launched on April 22, 2013. Under the Program, LGUs are directed to conduct self-assessment of their own compliance status, and to voluntarily implement corrective action. The self-assessed compliance reports are validated and ESWM Excellence Awards are conferred to LGUs with the best compliance programs. LGUs that fail to comply will be charged administratively or criminally. In 2016, criminal and administrative charges were filed against 50 LGUs for violations of RA 9003 provisions.

Lastly, the measure (Senate Bill 370) filed in the Senate during the 16th Congress amending the Local Government Code (R.A. 7160) to integrate solid waste collection and disposal as a basic service, and empower the local Sanggunians to provide for this basic service should be refiled under the 17th Congress. The measure seeks to encourage the people to advocate the said service within the LGUs where they live and to awaken the interest of local legislators to plan and implement a system for waste collection and disposal

In the House of Representatives, a number of legislative measures have been filed to strengthen the implementation of RA 9003 through the following a) mandating all elementary and secondary schools to adopt policies implementing solid waste management (House Bill No. 05087); b) institutionalizing rewards for compliance (House Bill No. 05915); c) providing stiffer fines and penalties for illegal disposal of waste materials and violation of other prohibited acts (House Bill Nos. 770 and 05668); and c) conducting review, pursuant to the oversight function of congress, of the implementation of RA 9003 to identify the constraints and challenges faced in enforcing its provisions (House Bill Nos. 00425 and 00547). The enactment of these legislative proposals may aid in the effective management of solid wastes in the Philippines.