

Solid Waste Management (SWM) Conditions, Practices and Challenges

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Abstract

One of the major challenges around the globe is solid waste and solid waste management. It is a challenge for the city authorities in developing countries mainly due to the increasing generation of waste, the burden posed on the municipal budget as a result of the high costs associated to its management, the lack of understanding over a diversity of factors that affect the different stages of waste management and linkages necessary to enable the entire handling system functioning. It is a recurring problem associated with the vast increase in population. Solid waste affects us and our environment. It affects land, water, air, and human health. According to the UN (2013) it is expected that two-thirds of the global population will migrate to cities. And with the growing population, waste generation is anticipated to upsurge.

In response to the growing number of solid wastes, the Philippines Republic Act 9003 was launched on January 26, 2001. This act provides for an ecological solid waste management program, creating the necessary institutional mechanisms and incentives, declaring certain acts prohibited and providing penalties, appropriate funds for other purposes. This act, known as "Ecological Solid Waste Management Act of 2000." Section 2 declared that the systematic, comprehensive and ecological solid waste management program should: a) ensure the protection of the public health environment; b) utilize environmentally-sound methods that maximizes the utilization and valuable resources and encourage resource conservation and recovery; c) set guidelines and targets for solid waste avoidance and volume reduction through resource reduction and waste minimization measures including composting, recycling, re-use, recovery, green charcoal process and others; and d) encourage greater private sector participation in solid waste management (Republic Act 9003).

Solid Waste Management is one among the basic essential services provided by municipal authorities in the country to keep urban centers clean. However, it is among the most poorly rendered services in the basket—the systems applied are unscientific, outdated and inefficient; population coverage is low, and the poor are marginalized. Municipal laws governing urban local bodies do not have adequate provisions to deal effectively with the ever-growing problem of solid waste management. The urban population has grown fivefold in the last six decades, with 285.35 million people living in urban areas as per the 2001 Census. As stated by Castillo, A.L. (2012) The global community recognized that Solid Waste Management (SWM) is an issue that requires serious attention. The aggressive pursuit for economic growth, by developing countries like the Philippines, has resulted in the manufacture, distribution and use of products and generation of wastes that

contribute to environmental degradation and global climate change. Available data showed that the Philippines is the 9th most among the countries at risk from climate change due to rise of sea levels, intense storm surges and droughts. Along with economic progress, the rapid growth in population has also made waste management a major environmental challenge for the country.

In Lipa City alone, 167,199.42 kilos of garbage are produced per day, contributing as the second biggest generator of waste in the whole province of Batangas. (CENRO-Lipa, 2018).

The goal of this study is to identify the current situation of city solid waste management conditions, practices and challenges with the focus on three selected barangays. These barangays are near the vicinity of University of Batangas Lipa City where the researchers work. The focus is to identify, evaluate and assess the existing solid waste management; and design and develop a piece of equipment for use as an alternative way ideal for the current condition of solid waste management for the abovementioned barangays in Lipa City.

This study used a descriptive-evaluative, quantitative research design and utilized the following: (1) 10- year Ecological Solid Waste Management Plan of the Lipa City Environmental and Natural Resources Office or CENRO; (2) and a personal interview with the head and twenty-seven (27) staff of Lipa City Environmental and Natural Resources Office, in-charge in the solid waste management of the city.

In conclusion, the study gathered that Solid wastes in three barangays are manually collected on a scheduled basis and transferred to a rented private disposal facility in the City of Calamba. Healthcare facilities generating more of the solid wastes have their private collecting services.

City Environmental and Natural Resources Office (CENRO) of Lipa City strictly implements solid waste management ordinances and programs for the effective collection system, monitoring of waste collection from residential, public and private areas, composting, recycling, and segregation of wastes through Materials Recovery Facility (MRF).

Although the strict implementation of solid waste management ordinances undergoes instigation, problems and issues concerning complete collection are still encountered since city's collection of wastes is under contract services with a private hauler and can only accommodate collection in urban and public areas/barangays. There is also limited number of garbage trucks, and some rural barangays still don't have a system of waste collection.

With some of the problems/issues concerning solid waste management, residents of selected barangays can utilize the process of garbage segregation and recycling which can

generate additional income. Other public and private establishments implement their environmental programs for solid waste management such as “Reduce, Reuse and Recycle” and “Trash for Cash”.

Solid waste management for the three barangays is administered properly during the storage, collection, transfer and transportation, processing, and recovery up to final disposal. However, an extensive program for solid waste control including regulatory and enforcement of barangay officials, public education, awareness and involvement must be given full attention. The biggest challenge for LGU Lipa is to

come up with a concrete plan on the effective and strict implementation of solid waste management for all barangays.

As part of the program to be implemented, the researchers propose to introduce a piece of equipment, called biodegradable composter, also known as BIOCOM. BIOCOM is a biodegradable composter tank which grinds or decomposes organic material biologically and ends with fertilizer as a by-product. It is a product development project or PDP of the 4th year BS Industrial Engineering students of the University of BatangasLipa City.