



# Waste management strategies, practices and compliance among higher education institutions and constituent communities: impact to economic sustainability

GILDA B. GOSE

Faculty

(Author)

Western Mindanao State University, Zamboanga City, Philippines

## ABSTRACT

This study was conducted to determine the waste management, strategies, compliance and best practices among higher education institutions and constituent communities and its impact to economic sustainability in Zamboanga Peninsula. The study utilized the descriptive - quantitative correlational type of research employing survey method. It used survey questionnaires which were answered by 120 teachers and 30 administrators of six higher education institutions and 18 barangay officials and 18 barangay health workers of six barangays in Zamboanga Peninsula during school year 2020-2021.

3644

The findings indicated that 50% out of 150 respondents were from private and public higher education institutions. The strategies in the implementation of waste management of the higher education institutions and constituent communities in collecting, transporting and disposing waste were done to maintain clean and healthy environment and to promote waste reduction at the source of generation. The best practices of the higher education institutions and constituent communities in the implementation of waste management are Proper Waste Disposal; Reuse of School Supplies; Environment Friendly and Eco-Sensitive City. The extent of compliance in the implementation of waste management of higher education institutions and constituent communities in Zamboanga Peninsula was compliant.

The study concluded that both public and private HEIs complied with the standards on the process of accreditation authority and constituent communities highly practiced the implementation of waste



management. Thus, the implementation of the waste management had positive impact to the economic sustainability of the HEIs and constituent communities in Zamboanga Peninsula. Further it recommends that, the School administrators may craft a campaign ad to promote awareness on the proper waste management and initiate the program by implementing the stringent waste reduction approach. Also, initiate a program by presenting different strategies in the application of the 5Rs in the community economic sustainability policy. Cooperation with the school management in terms of proper waste disposal is also necessary. Lastly, future researchers are also encouraged to continue the study by using similar variables.

**Keywords:** Economic Sustainability, Waste Management Compliance, Waste Management, Waste Management Practices, Waste management strategies

**DOI Number:** 10.48047/nq.2022.20.22.NQ10362 *NeuroQuantology* 2022;20(22):3644-3652

3645

## 1. INTRODUCTION

Waste management or waste disposal is all the activities and actions required to manage waste from its inception to its final disposal. It is the absolute term for collecting, transporting and disposing of waste. Waste management encompasses management of all processes and resources for proper handling of waste materials, from maintenance of waste transport trucks and dumping facilities to compliance with health codes and environmental regulations. This term is assigned to the material, waste material that is produced through human being activity. This material is managed to avoid its adverse effect over human health and environment, (Lawson, 2019).

In Addition, new trends in waste management are emerging with the goal to reduce, reuse and recycle waste. The challenges of sustainability in waste management can be well defined according to the so-called triple-bottom-line, or triple-P, paradigm (People, Planet, and Profit. Todorovic (2019) stated

that this affects the increase of environmental jobs mainly in the area of waste management, renewable energy and water, by developing new ecological enterprises and encouraging eco-innovation. However, there are challenges and constraints that economies faced in achieving sustainable development.

In Zamboanga Peninsula, particularly in the HEIs and in the communities, there are some students and constituents who have problems in disposing their garbage. Usually, the collection of garbage is set by schedule, and sometimes, the truck collector fails to collect the garbage then some schools and barangays consider this as problem because aside from the bad smell, it also causes unhealthy conditions to school campus and in the community.

Hence, this is the main reason for the researcher to embark on this study to determine the waste management strategies, compliance and practices among HEIs and constituent communities and its impact to economic sustainability. This study further aims to determine the relationship between the implementation of waste management practices and compliance of HEIs among; Constituent Communities (rural and urban) and HEIs (public and private).

## 2 - METHOD

### Research Design

The study utilized the descriptive quantitative correlational type of research employing survey method. It is descriptive because this is believed or considered as the most appropriate in order to determine the different strategies, best practices and compliance in the implementation of the waste management of the HEIs and the constituent communities in Zamboanga Peninsula. Further, this study is quantitative – correlational study because it determines the significant relationship between the private and public HEIs' implementation of the strategies, practices and compliance of waste management.

## 3 - RESULTS

The findings indicated that 50% of the respondents were from private and public higher education institutions. The higher education institutions were accredited by the different authorizing agencies such as PACUCOA, AACCUP, TESDA and ISO.

Most of the respondents resided in the urban and commercial industrial zone area. The best practices of the higher education institutions and constituent communities in the implementation of waste management are the following: Proper Waste Disposal; Reuse of School Supplies; Environment friendly and Eco-Sensitive City; Computerized Complaints Redress System and the Staff mobilization and Training and Education Waste Segregation. The extent of compliance in the implementation of waste management of higher education institutions and constituent communities in Zamboanga Peninsula was compliant. There is a significant relationship in the strategies in the implementation of waste management of higher education institutions between Public and Private in terms of transporting and disposing strategies however, there is no significant relationship in the strategies in terms of disposing, best practices and compliance in the implementation of waste management of higher education institutions and constituent communities in Zamboanga Peninsula between rural and urban. There is a significant difference in the strategies, best practices and compliance in the implementation of waste management of higher education institutions and constituent communities when data are analyzed according to classification of school and type of industrial zone, however, there is no significant difference in the implementation of the strategies, best practices and compliance of waste management between private and public higher education institutions, between urban and rural

3646

communities and according to accreditation of the HEIs. The Economic Sustainability of the Higher Education Institutions and constituent communities are Reuse, Reduce, Recycle, Reinvent and Recover. Waste Management Strategies in terms of collecting, Practices and Compliance of the Higher Education Institutions significantly impact the Economic Sustainability in terms of Reduce and Recycle and for constituent communities' strategies significantly impact the Economic Sustainability in terms of Reuse, Reinvent and Recover.

#### 4- DISCUSSION

The strategies in the implementation of waste management of the HEIs in collecting, transporting and disposing waste are done to maintain clean and healthy environment, to promote waste reduction at the source of generation and to raise awareness of the public health implications of waste management. The strategies in the implementation of waste management of the constituent communities in Zamboanga Peninsula in collecting, transporting and disposing are done to collect, transport and dispose waste materials to maintain clean and healthy community, to manage the reduce, reuse, recycle, reinvent & recover scheme and to promote waste reduction at the source of generation and raise awareness of the public health implications of waste management. Practices of the HEIs and constituent communities in the implementation of waste management are the following: Proper Waste Disposal and Implementation and monitoring waste policies, the Reuse of school supplies, Environment friendly and

eco-sensitive city, Computerized Complaints Redress System and the Staff mobilization, training and education. Practices of the constituent communities are Waste Segregation, Proper Waste Disposal, Strengthening the Municipal Standing Committee and the Computerized Complaints Redress System. The extent of compliance in the implementation of waste management of HEIs and constituent communities in Zamboanga Peninsula was compliant. The HEIs and constituent communities comply to the implementation of waste management for drainage considerations and refuse, trash or waste materials are evacuated from school environment; contract with the barangay about the garbage truck which collects the waste of the institutions; collect baseline data on waste generation, provide economic incentives to encourage local and community-based recycling and waste reduction and produce bio fertilizer; and divert and isolate green waste from landfill. There is a significant relationship in the strategies in the implementation of waste management of HEIs in Zamboanga Peninsula (between Public and Private) in terms of transporting and disposing strategies. There is no significant relationship in the strategies in terms of disposing, practices and compliance in the implementation of waste management of HEIs and constituent communities in Zamboanga Peninsula (between Public and Private and (between rural and urban). The Economic Sustainability of the HEIs are Reuse was 1<sup>st</sup> in rank, reduce was 2<sup>nd</sup>, Recycle was 3<sup>rd</sup>, Reinvent was 4<sup>th</sup> and Recover was 5<sup>th</sup> in rank, in addition,

3647



for the constituent communities, Reduce was 1<sup>st</sup> in rank, Reuse was 2<sup>nd</sup>, Recycle was 3<sup>rd</sup>, Recover was 4<sup>th</sup>. and reinvent was 5<sup>th</sup>. Waste Management Strategies in terms of collecting, Practices and Compliance of the HEIs significantly impact the Economic Sustainability in terms of Reduce and Recycle and for constituent communities' strategies significantly impact the Economic Sustainability in terms of Reuse, Reinvent and Recover. However, the waste management practices and compliance of the HEIs and constituent communities did not significantly impact the economic sustainability in terms of 5Rs. Both public and private HEIs complied with the standards on the process of accreditation authority. The barangay officials and health care workers resided in the urban community. The HEIs in Zamboanga Peninsula implemented different strategies in collecting, transporting and disposing waste. The constituent communities in Zamboanga Peninsula implemented various strategies in collecting waste to provide adequate waste segregation, in transporting and disposing waste materials. The HEIs and constituent communities had highly practiced the implementation of waste management such as Waste/pollution education and awareness, healthcare waste management, monitoring and control of ozone-depleting substances, landfill/dumpsite management and research in to anaerobic digestion and waste management. The HEIs and constituent communities comply to the implementation of waste management. Private HEIs and urban constituent communities in

Zamboanga Peninsula used different strategies in collecting, transporting and disposing waste materials, implemented and complied with the standard waste management program. Private HEIs and commercial zone of constituent communities in Zamboanga Peninsula are compliant to the standard as set forth there in by the accreditation agencies and practiced different waste disposal strategies. HEIs and constituent communities used the 5Rs strategies in compliance to the implementation of waste management for economic sustainability. Waste management strategies, practices and compliance in the implementation of the waste management had positive impact to the economic sustainability of the HEIs and constituent communities in Zamboanga Peninsula.

3648

## 5- REFERENCES

- Agaton, C. (2020). Socio-Economic and Environmental Analyses of Sustainable Waste Disposal
- Ampofo, J. (2020). Waste Disposal Management Practices in selected Senior High Schools Within the Wa Municipality of Ghana
- Ashton, M., and Ricketts, M. (2009). Regional Initiative for Solid Waste Management in the Pacific Region, Feasibility Study (Phase II, Component 2), l'Agence Française de Développement.
- Benveniste, A., Griffiths, S. and Sutton, P. (2017). Economic Sustainability: The Corporate Challenge

- of the 21st Century, Allen & Unwin, Sydney
- Bernardo, C. (2008). Ecological Solid Waste Management Act of 2000 Implementation in Metro Manila
- Beredo, Ma. Castillo, T., Macaraig, X., Navarro, A., Sevilla, J., & Villanueva, A. (2013). Effects of Tourism Environmental Management Practice for the Waste Management sector.
- Carting, Cal (2017). 4 Effective Waste Management Strategies
- Chronicle, N. (2018). Trash segregation is key to top garbage disposal Cite this publication
- Clifford (2016). Waste management elementary school waste reduction and recycling program DOI: 10.1556/606.2015.10.2.13
- Cuyos, J. (2013) Mandaue to teach students on proper garbage disposal. Retrieved from: <https://newsinfo.inquirer.net/450133/mandaue-to-teach-students-on-proper-garbage-disposal>
- De Castro D., Mendoza, B., & Pineda, R. (2012) Proposed Waste Disposal System of San Jose College, Batangas
- Dias, P., Bernardes, A. and Huda N. (2029). Ensuring best E-waste recycling practices in developed countries: An Australian example. *Cleaner Prod*, 209 (2019), pp. 846-854, [10.1016/j.jclepro.2018.10.306](https://doi.org/10.1016/j.jclepro.2018.10.306)
- Dos Santos, Aguinaldo, C. P. Sampaio, C. Vezzoli. (2017). "Cascade approach on recycling for marble and granite product design." *Materials & Design*. (30:2) 287-291.
- Ebrahimi, K. and North, L. (2017) "Effective strategies for enhancing waste management at university campuses", *International Journal of Sustainability in Higher Education*, Vol. 18 Issue: 7, pp.1123-1141, <https://doi.org/10.1108/IJSHE-01-2016-0017>
- Fehrenbach, H. (2005). Ecological and energetic assessment of re-refining used oils to base oils: Substitution of primarily produced base oils including semi-synthetic and synthetic compounds. Institute for energy and Environmental Research (IFEU). Heidelberg, Germany.
- Fobil JN, Armah NA, Carboo N. (2012). The influence of institutions and organizations on urban waste collection systems: An analysis of waste collection systems in Accra, Ghana *J Environ Manage*.
- Furto M., Reyes P. (2013). Greening of the Solid Waste Management in Batangas City, *Journal of Energy Technologies and Policy*, 3(11), 187-194

Gertsakis, J. and Lewis, H. (2013). Sustainability and the Waste Management Hierarchy

Gutberlet, J. (2017). Waste in the City: Challenges and Opportunities for Urban Agglomerations DOI: 10.5772/intechopen.72047. retrieved from: <https://www.intechopen.com/books/urban-agglomeration/waste-in-the-city-challenges-and-opportunities-for-urban-agglomeration>

IGES: 3R Strategies for Seven Countries in Asia. (2017). [http://enviroscope.iges.or.jp/modules/envirolib/upload/2637/attach/national\\_3r\\_strategy\\_development\(fullversion\).pdf](http://enviroscope.iges.or.jp/modules/envirolib/upload/2637/attach/national_3r_strategy_development(fullversion).pdf)

Imura, H.; Yedla, S.; Shinirakawa, H.; and Memon, M.A. (2005). Urban Environmental Issues and Trends in Asia – An Overview, International Review for Environmental Strategies, Vol. 5, pp. 357-382.

Journal of Silliman University Environmental Principles, Policies and Guidelines 2018. Lawson, E. (2019) Your School Needs Effective Solid Waste Management.

Lenkiewicz, Z. and Webster, S. (2017). How to collect, transport and dispose waste safely and efficiently. Retrieved from: <https://wasteaid.org/wp-content/uploads/2017/10/11-How-to-collect-waste-safely-and-efficiently-v1-mobile.pdf>

Marshall, R. E., and Farahbakhsh, K. (2013). Systems approaches to integrated solid waste management in developing countries. Waste Management, 33(4), 988-1003.

Matthews, K. (2019). Waste Management Practices (And Their Impact on Urban Planning) 3650

McAllister, J. (2015). Factors Influencing Solid-Waste Management in the Developing World

Mehta, P. (2021). Economic Development and Sustainable Development. Retrieved from: [https://www.economicdiscussion.net/articles/economic-development-and-sustainable-development/2119#google\\_vignette](https://www.economicdiscussion.net/articles/economic-development-and-sustainable-development/2119#google_vignette)

National Statistics Office (NSO) <http://www.census.gov.ph/content/2010-census-population-and-housing-reveals-philippine-population-9234-million>

NSO Report, 2010 <http://www.census.gov.ph/content/population-samar-showed-increased-92-thousand-results-2010-census-population-and-housing>

Ochieng, V. (2010) An assessment of the level of compliance with the solid waste management regulations in Starehe district, Nairobi County.

Okoye, F. (2015). Students' waste disposal: a disciplinary problem in tertiary institutions.

Retrieved

from:

<https://www.ijern.com/journal/2015/October-2015/06.pdf>.

Punongbayan, C, et.al. (2015). Waste Management Practices of an Educational Institution, Bachelor of Science in International Travel and Tourism Management Graduates, College of International Tourism and Hospitality Management, Lyceum of the Philippines University, Philippines.

Raghavan, V. et.al. (2013). Awareness, Attitude and Practice of School Students towards Household Waste Management

Rinkesh, G. (2021). What is Sustainable Waste Management?

<https://www.conserve-energy-future.com/sustainable-practices-waste-management.php>

Sarinas, B.G.S.. (2013)Journal of Maritime Research on Solid waste management: Compliance, practices, destination and impact among merchant vessels docking in Iloilo Ports, Philippines

Scheinberg, A. (2012). Informal Sector Integration and High Performance Recycling: Evidence from 20 Cities, 2012, pp. 33. Available at: [http://wiego.org/sites/wiego.org/files/publications/files/Scheinberg\\_WIEGO\\_WP23.pdf](http://wiego.org/sites/wiego.org/files/publications/files/Scheinberg_WIEGO_WP23.pdf)

Global Partnership on Waste Management

<http://www.unep.org/gpwm/nformationPlatform/tabid/56405/Default.aspx>

SWEEP-Net (2017). The Solid Waste Management Situation in Mashreq and Maghreb Countries: Update on the Challenges and Opportunities, <http://www.sweep-net.org/?q=node/161>

Tay Joo Hwa, Solid Waste Management: Issues and Challenges in Asia, ©APO 2007, ISBN: 92-833-7058-9, Report of the APO Survey on Solid-Waste Management 2004–05 <http://www.apotokyo.org/publications/files/ind-22-swm.pdf>

Tilos, J. (2018). RDC7 enjoins LGUs to enact ordinance on anti-plastic use.

Todorovic, B. (2019). Waste management and sustainable economic development in the modern economies

UNEP, Technology for Waste Management/Infrastructure – Cebu, Philippines, 2019, [http://www.unep.or.jp/ietc/GPWM/data/.../WP\\_5\\_T\\_TechnologyForWM\\_Cebu.pdf](http://www.unep.or.jp/ietc/GPWM/data/.../WP_5_T_TechnologyForWM_Cebu.pdf), referred on 21/05/2011

Welz, W. (2017). Sustainable Practices in Waste Management.





Yoda, R. Chirawurah, D. and Adongo, P.  
(2014). Domestic waste disposal practice and perceptions of private sector waste management in urban Accra

Zafar, S. (2020). Guide to Effective Waste Management. Retrieved from:  
<https://www.bioenergyconsult.com/effective-waste-management/>

3652

