

Perceptions and Practices among Barangay Micro-Businesses: Inputs to Local Solid Waste Management Policy

Abegail C. Indama¹, Haipa Abdurahim-Salain, Ed.D.²

^{1,2}Basilan State College

Email address: abegailcarpioindama@gmail.com

Abstract— *Solid Waste Management is a persistent environmental concern of which does not concern only the Philippines but other countries worldwide. It emerged as a societal problem that posts adversative impacts to the health and welfare of the communities. The business sector is considered as one of the main contributors/generators of wastes across societies. It ranges from chemical wastes in factories, food wastes in restaurants, plastics in stores, papers, tins and etcetera. There are various policies highlighting the importance of community engagement in the implementation of waste management policies. The barangay as the smallest local government unit has an important role in monitor this aspect. Hence, this study moved in response to the ever-present need to reform this policy – an input to craft a more inclusive and responsive one. This study used a mixed method (quantitative-qualitative) research design through surveys and interviews to gather the needed data to form the base of the study. The key findings of the study shall provide a valuable input in terms of practices and perceptions to reform the implementation of the solid waste management policy that we have today.*

Keywords— *Barangay; business sector; community engagement; practices and perceptions; solid waste management.*

I. INTRODUCTION

Solid waste is a worldwide and multidimensional problem which poses increasing concern not only in Asia but in most developing countries in the world (Ray, A., 2009; Singh et al., 2011; Bhuiyan, 2010; Marshall & Farahbakhsh, 2013). Ahmad (2019) stated in his study that for the past years, the increase in solid wastes has been a global concern. According to him, urbanization, population growth and lifestyle transitions are but some of the factors contributory to the continuous increase of solid wastes in Chittagong City, Bangladesh. This was likewise supported by the report presented by the Department of Urban and Regional Planning University of Nigeria, Enugu Campus (n.d.) which further stated that in recent years, solid waste management has attracted much greater attention all over the world. The continuous increase in waste volume due to rapid population growth, socio-economic development, lifestyles, industrialization, technology advancements and consumption patterns contributed more to the problems facing government nowadays. Findings of this study showed that the development brought by these advancements reciprocated disadvantages or adverse effects to the environment. This led to the poor state of our environment as all manner of wastes clog our drainages,

litter our streets, highways, market places, public places and in fact in most open places (Opata, n.d.).

According to WHO (1996), Solid Waste Management problems are basically urban problems. Based from a relevant study (Department of Urban and Regional Planning University of Nigeria, Enugu Campus, n.d.) wastes in Nigeria are disposed on the drainage channels, open plots and in the road side. The burning of solid wastes is also prevalent in the area and among the traders. Conversely, findings of this study showed that improper waste habits had triggered diseases and outbreaks brought about germs, insects, rats and other disease vectors. According to CHINWE (2010), the lack of street dumpsters, adequate disposal facilities, environmental education among residents are but some of the causes of observed bad disposal habit (Department of Urban and Regional Planning University of Nigeria, Enugu Campus, n.d.).

The State of Nigeria in coordination with other attached agencies has taken the lead in addressing the problems arising from improper solid waste management (Nabegu & Mustapha, 2015). In a study conducted by Nabegu and Mustapha (2015), a seven-day period municipal waste collection was declared by the State Governor to show how serious the government was in ending the concern on municipal wastes. However, despite of this initiative by the State, the problem has only worsen, triggering the long-term well-being of residents as well as putting the global environment at risk (Nabegu & Mustapha, 2015).

Adeniran, A. & Oyemade, H. (2016) studied the solid waste management practices in Ikorodu, Nigeria. The authors claimed that the habit of separating recyclable/reusable solid wastes has not yet gained full recognition in the community. Findings revealed that there were no solid waste management in both household and institutional levels (Adeniran & Oyemade, 2016). Opata (n.d.) in his review of solid waste management and sustainable development also stressed the challenges experienced by Nigeria in dealing solid wastes since the post-independence era.

On the other hand, India has collaborated with business agencies like the Vicam Agrotech to deal the problems arising from waste management concerns. Vivam Agrotech has served as a partner of the Republic of India in developing strategies and technologies to convert wastes into energy. Bakhare and Kandalgaonkar (2019) in their study on Solid

Waste Management have revealed that despite of the government's efforts of allocating funds for the SWM, still the level of service was low. According to this study, service providers at times have failed to collect 30 percent of the total solid wastes produced by the community. These collected wastes on the other hand are improperly dumped in the landfills making it more difficult to segregate.

In a study conducted by Riwukore and Habaora (2019), challenges encountered by Indonesia in the implementation of waste management policy was determined. This includes the residents' behavior towards waste dumping, incompatible garbage transportation and area of landfills. Residents still bring with them the habit of dumping wastes anywhere they wanted. On the other hand, garbage trucks at times carry waste out of their capacities which are improperly dumped into the landfills. Kupang City was awarded by the East Nusa Ministry of Environment and Forestry in 2018 as the dirtiest city in Indonesia (Riwukore and Habaora, 2019). In the advent of the new administration, the newly inaugurated mayor committed to come up with response actions to this concern. Conversely, as the City is still on its transition state, practices from the previous administration in terms of collecting and disposing wastes were still evident which made it even harder for the City to cope up with the continuously expanding complexity of waste problem (Riwukore & Habaora, 2019).

A study conducted by Opatá (n.d.) presented the strategies on how to address problems arising from improper solid waste management in Kano Metropolis, Nigeria. He concluded that it is important for the government to establish well-crafted legal policies with clearly defined roles in the implementation of waste management schemes. The author argued that the inclusion of all stakeholders in the process is but equally essential. Local governments should likewise be provided with the power and authority to impose and manage their respective waste management programs. Every stakeholder should be involved in the planning, implementing and evaluation of WM policies/programs, thereby establishing within them a sense of accountability to the community. And to further improve the services offered, the professionalization of the waste management sector and its workers according to Opatá (n.d.) should likewise be considered. In a different report conducted by the Department of Urban and Regional Planning University of Nigeria, Enugu Campus (n.d.), it was suggested that waste management agencies should consider the policy of prompt waste evacuation. The failure to collect the wastes on set time leads to wastes getting overfilled and stank. This opens an opportunity for other residents to dump their garbage indiscriminately (Department of Urban and Regional Planning University of Nigeria, Enugu Campus, n.d.).

Getting a one-time solution for this worldwide crisis would sound impractical, however, as Ahmad (2019) argued, minimizing its impact to the community could at least be achieved through public-private partnerships. This was further supported by a study conducted by Naidu (2017), which emphasized the importance of partnerships with private agencies like the one implemented in Malaysia through the SWM Environment Sdn Bhd in South region, E-Idman Sdn Bhd in North region and also Alam Flora Sdn Bhd in the

central and eastern region to reduce the solid wastes generated by the communities.

The solid wastes of Malaysia could fill the whole Kuala Lumpur Conventional Center. This notion suggests that Malaysia's waste generation increases through the years. Naidu (2017) argued that despite of the partnerships between the public and private agencies, community participation is still the key to its success. The residents were expected to take part on the program by helping in reducing waste generation through properly storing their waste in a bag or bin, separating the solid waste at source and by putting the waste at the right place at the proper time for collection. Further the author mentioned the efforts taken by the government of Malaysia to extend awareness to residents. It launched the #ASINGKAN campaign where 60,000 pamphlets were distributed to the household communities to educate them regarding proper waste practices. This program targeted the local households because of its significant contribution to the overall waste generated as claimed in the study of Pemandu (2015). According to Subash (2012), residents and other stakeholders should likewise be included in the process for them to be able to express their ideas and opinions. Public participation contributes to the success of any waste management program (Impacts of Community Participation in Waste Reduction and Separate-at-Source Campaign in Solid Waste Management, n.d.)

The concept of Zero Waste has been successfully adopted by some countries worldwide like Indonesia and Banda Aceh City. They have incorporated this concept in their waste management policies and was found to have minimized the volume of wastes dumped into the landfills.

II. BODY OF THE ARTICLE

The insistent concern on Solid Waste Management (SWM) has been recognized by the global community as an issue which requires serious attention (Castillo, A., Otoma, S., Status of Solid Waste Management in the Philippines, University of Kitakyushu, Japan). The Philippines continues to pursue its pronounced efforts towards the attainment of an enhanced economic stand in the global society. As it drives its frontier to the peak of development, various industries and factories started to emerge, generation of single-use products increased in volume and the complexity of environmental risks has stretched in scope. This is evident with the successive typhoon, drought and flood strikes the country experiences. Indeed, if no effective and holistic approach be undertaken, the development progress the Philippines aims to achieve shall pay off the ecological society it envisions for its future and future generations to come. Progress should be balanced with its impact to the society it develops. Socio-economic growth should provide good living conditions to the citizens through increased commercial investments, massive employment generation, access to quality education and improved public health. These however should not compromise the society the future generations deserve.

Data showed that the Philippines for the past years has undertaken several laws and regulations on environmental conservation, sanitation, health and waste management. There

were various Executive Orders, Department Orders, Presidential Decrees, Regulations and Ordinances in cities and municipalities which stressed the implementation of waste management policies aimed to address certain environmental concerns (Department of Environment and Natural Resources, 2003). Conversely, despite of this massive laws and policies implemented nationwide, why can't still the Philippines solve its waste problems?

It has been 18 years since Republic Act No. 9003 otherwise known as the Ecological Solid Waste Management Act of 2000 was passed into law. Still, Local Government Units struggle in its implementation at the local level. It seems that in the past years, the Act has not gained the popularity and acceptance it ought to have. And based from a relevant report conducted by the DENR in partnership with the Asian Development Bank, it was found that the implementation of waste management policies was inhibited by the lack of public understanding and knowledge which gradually led to limited public participation; hence contributing largely to the garbage crisis the country faces.

In response to the waste dilemma facing the Philippines over the years, this study came into being to basically determine the perceptions and practices among community stakeholders in terms of solid waste management. The involvement of all stakeholders in the process stems to the success of its implementation. Stakeholders consist of the waste processors, the waste generators and the government units. For the benefit of this study, the researcher delimited the scope to the waste generator sector only specifically the barangay micro-businesses such as the sari-sari stores, eateries, printing shops and the like.

This study employed a quantitative-qualitative (mixed method) design through the conduct of survey as validated by subsequent interviews. Convenience sampling was used to select the respondents of the study. Consent was obtained from the respondents afore the distribution of survey questionnaires. Thirty (30) local business owners were taken as main respondents of the study. Raw data obtained from the conducted survey were encoded as inputs to the Statistical Package for Social Sciences (SPSS) version 20 for statistical testing.

III. RESULTS

Results show the weighted mean of recorded responses of respondents in terms of their level of awareness on solid waste management policies. This indicates that the respondents were only moderately aware on the categories of biodegradable and non-biodegradable wastes. Further, the same applies with their level of awareness on waste segregation and waste recycling. On the other hand, results showed that respondents are very aware on the penalties and fines imposed against acts in violation of the ecological solid waste management policy which includes littering, throwing and dumping of wastes in undesignated public places.

Likewise, it was found that respondents were still undecided on the perceived roles of other stakeholders on solid waste collection and disposal. The same applies on their perspective on the inconviency of recycling materials.

However, respondents agree that proper waste management benefits the community; that they feel responsible for the waste they generate; that recycling makes a difference; they are concern in seeing garbage scattered; that waste segregation is not a waste of time; that they correct people who indiscriminately litter or drop garbage in unauthorized places; and that respondents favor the possible implementation of a reward/penalizing system in waste management policies.

The correlation test conducted indicates that there were no significant correlation between years in business and the level of awareness of respondents on solid waste management policy. This indicates that no matter how long the business was, it doesn't mean that business owners are much aware of the policies. In the same manner that no matter how new the business was, that doesn't necessarily means that the owners are not aware of the implemented policies. 60 percent of the respondents believe that waste management is not anymore a problem among the store owners in the community. While a minimum of 40 percent still finds waste management a dilemma.

60 percent of the respondents said that they produce plastic waste. 10 percent on the hand generates food waste and a minimal 2 percent produces paper wastes. On the other side of the findings, eatery was found to be the highest contributor of wastes with an average of 47 percent; followed by grocery/sari-sari stores with 37 percent; printing shops with 13 percent and school supplies stores with 1 percent.

Plastic bag still ranks as the most used containers for waste disposal with 50 percent response rate. 23 percent uses sack container; 10 percent uses carton/box; another 10 percent uses waste buckets; and 7 percent makes use of tin/can for garbage disposal.

66.7 percent of respondents throw their garbage once a day; 16.7 percent once in 2 days and 16.7 percent once in a week. This indicates that most local businesses regularly throw their waste for disposal/collection.

Based from the results of the study, 90 percent of the respondents dump their waste for collection by garbage trucks; 6.7 percent dumps their waste in public bins; and 3.3 percent throws their garbage in waste holes for decomposition.

IV. CONCLUSION

The findings of the study show that irrespective of the length of stay, local business owners are aware of the existing solid waste management policy as implemented by the local government unit. Still, the need for community orientation with regards to waste segregation and recycling particularly on the business sector as one of the waste producers was found of significance. Moreover, although local businesses are regularly disposing their wastes, conversely, it was found that majority of local businesses make use of single-use plastic bags for disposal; which in effect contributes to the cumulative waste volume in the community. Eateries were also determined to be the highest waste contributor on top of sari-sari stores, printing shops and school supplies stores. In this favor, it is highly recommended that solid waste management policies must enclose supplementary provisions on the responsible use of single-use plastics in waste disposal. In

addition, follow-up seminars and local barangay conferences should be observed to sustain the existing policy. Similarly, a reward and penalty system should likewise be integrated in the barangay waste management plans to promote participative and engaging community policies.

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