



## Assessing the Solid Waste Management in Lingayen, Pangasinan

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**Abstract** –It is stipulated in the Ten-year Solid Waste Management Plan of Lingayen is to monitor and evaluate the implementation of the municipal solid waste management framework through the municipal solid waste management plan. It is in this light that the researcher aimed to study the state of municipality's solid waste management based on the following: (1) percentage of household segregating waste, (2) kinds of waste treatment method and alternative practices done in the households and different institutions, (3) level of implementation of Municipal Ordinance No.2, series of 2011 as perceived by household members and barangay officials, (4) problems and concerns that impede proper implementation of the ordinance and (5) the degree of willingness of the stakeholders to support or adopt solid waste management programs in Lingayen. The study used descriptive method of research. Research findings showed that less than half of the household- respondents practiced waste segregation in their waste disposal. Results of Chi Square test for independence indicated that there is no sufficient statistical evidence to conclude that waste segregation practices is dependent on the area or the location of the household. Apparently, the location of the household is not a variable whether one practices segregation or not. On the other hand, all of the various institutions surveyed—hotels, restaurants, schools, market areas practiced waste segregation in their waste disposal management. A significant majority of the households surveyed practiced dumping their household waste. Among the observed practices to get rid of waste, dumping is the most commonly used and survey results indicate that nearly three out of every four household practices it. Other significant waste disposal practices mentioned are selling, burying and burning. For alternative practices of waste management, most households reuse their household wastes particularly plastic bottles and glass as containers.

**Keywords** –Solid waste management, waste treatment, policies on waste management, household waste practices

### INTRODUCTION

In the town of Lingayen, two ordinances on Solid Waste Management were enacted as governing policies that are aimed to reinforce RA 9003 Act on Ecological Solid Waste Management namely Ordinance No. 53, s-1996 or the Lingayen Comprehensive Solid Waste Management and Ordinance No.2, s-2011 or the Ordinance Prohibiting the use of plastic bags on dry goods and regulating its utilization on wet goods and prohibiting the sale and use of styrofoam in the municipality of Lingayen and prescribing the penalties thereof. The policy envisions to provide solution to the growing concern on solid waste management in the town particularly the urgency to regulate the use of plastic bags to prevent serious ecological degradation.

In this view, the researcher deems it vital to investigate the actual solid waste management practices in different areas of Lingayen such as households, schools, public market, private establishments and hospitals

### OBJECTIVES OF THE STUDY

The study aimed to determine the state of municipality's solid waste management based on the following: (1) percentage of household segregating waste, (2) kinds of waste treatment method and alternative practices done in the households and different institutions, (3) level of implementation of Municipal Ordinance No.2, series of 2011 as perceived by household members and barangay officials, (4) problems and concerns that impede proper implementation of the ordinance and (5) the degree of willingness of the stakeholders to support or adopt solid waste management programs in Lingayen.

### MATERIALS AND METHODS

#### The Questionnaire

The questionnaire was administered to two hundred ninety (360) households, three (3) hotels, five restaurants and five academic institutions to collect general information and understand the respondents on

the status of solid waste management in the town of Lingayen. Fifty on (51) barangay officials were asked to answer the portion o

f the questionnaire pertaining to their perception on the level of implementation of Municipal Ordinance No.2, S-2011. It was validated by two individuals who are knowledgeable and in authority in dealing with solid waste management. One is the provincial solid waste management officer and the other is the municipal environment and natural resources officer (MENRO) of Lingayen.

**The Interview Guide**

The interview guide was used to gather information from key informants who provided relevant and significant information pertaining the municipalities’ solid waste management program. The interview was targeted to include the MENRO, Dumpsite Administrator, Barangay Officials, street sweepers and vendors in the town of Lingayen.

**The Research Participants**

To identify the areas of focus, the survey team with the assistance of the MPDO, divided the municipality into four categories; the Eastern, Southern, Western and Central areas of the town. In each area, the team selected six barangays with a total of 24 barangays being surveyed. In each barangay, 15 households and at least three barangay officials were identified by the team as respondents. All three hotels in the municipality were subjected for the survey, five restaurants in strategic places within the town proper, and five academic institutions were likewise enjoined to respond to the survey. Fifteen stalls from the market (both wet and dry sections) were also included.

**Waste Segregation**

**Data Sources and Data Collection Method**

The data for the preparation of this report were collected from both primary and secondary sources. For the primary sources, data questionnaire survey was done in households, commercial establishments (shops, hotels and restaurants), government and non-government institutions and schools. For secondary data, journal articles, booklets and brochures published by municipality were consulted. MENRO, Provincial Waste Management Officer, Municipal Dumpsite administrator, street sweepers and youth representatives were considered for overall information of the SWM status of the Municipality. Other sources of data include documented information, household survey, market waste survey, ocular inspection at the dumpsite and photography.

**RESULTS AND DISCUSSION**

Three hundred sixty (360) households sampled in the Eastern, Western, Southern, and Central cluster areas of Lingayen took part and became the actual respondents of the study. Institutions surveyed in the community included Hotels (4), Restaurants (7), Schools (6), and Markets Vendors (10). Also, barangay officials -- inherent of their duties as administrators of their respective localities were involved in the study by soliciting their observations on the seriousness of SWM problems and their willingness to support and adopt a program for a more effective and sustainable SWM.

**Survey Results**

The following are some significant results of the survey. Contingency tables were constructed to facilitate understanding of the results, and in some cases, the Chi Square test for independence was used to check whether a significant relationship exist between the Lingayen cluster areas and the waste segregation practices

Table 1: Households in Lingayen Observing Waste Segregation

Lingayen Area	WASTE SEGREGATION				Total
	Yes	%	No	%	
1. Eastern	34	9.19	5	15.67	92
2. Western	39	10.54	5	14.6	93
3. Southern	48	12.97	4	11.89	92

4. Central	45	12.16	4 8	12.97	93
Total	166	44.86	2 0 4	55.14	370

A little less than half (44.86%) of the household-respondents observed waste segregation in their waste disposal practices. Practically, this suggests that only nine (9) out of 20 households surveyed practiced waste segregation. This finding tends to suggest there is much more to be desired on the households' waste segregation effort.

Subjecting these data to the Chi Square test for independence, results indicates that there is no sufficient statistical evidence to conclude that the waste segregation practices is dependent on the area or location of the household. Visual investigation of the table shows

that that there is a slight or not significant variation among the proportion of those who practiced waste segregation. Apparently, the location of the household is not a variable whether one practices segregation or not.

On the other hand, all of the various institutions surveyed—hotels, restaurants, schools, market areas practiced waste segregation in their waste disposal management. That is quite expected for them to do so, since all of them are in the business of catering to the needs of the locality, not to mention monitoring of authorities as requirement to renew sanitary and business permit of these establishments.

**Practices on waste treatment management**

Table 2: Common Practices of the Households in Waste Treatment Management

Lingayen Area	Burni ng	Buryi ng	Dum ping	Comp osting	Selli ng	Collected by SWM
1. Eastern	9	34	76	8	42	39
2. Western	14	43	77	7	49	39
3. Southern	16	40	71	11	47	17
4. Central	36	41	53	9	61	15
Total	75	158	277	35	199	110
Percentage	20.27	42.7	74.86	9.46	53.7 8	29.73

A significant majority (74.86%) of the households surveyed practiced dumping their household waste. Among the observed practices to get rid of waste, dumping is the most commonly used and survey results indicate that nearly three (3) out of every four (4) household practices it. Other significant Waste Disposal practices mentioned are selling (53.78%), burying (42.7%) and burning (20.27%). Perhaps, these practices

are exercised by quite a number of households since only 29.73% roughly, only three for every ten households says that their waste is collected by SWM.

In contrast, various institutions surveyed stated that all their wastes are collected by dump trucks of the LGU's SWM. These are already- established institution in the community such that services offered by the municipal SWM are already in place and is readily available/accessible for them.

**Alternative practices**

Table 3: Alternative Practices of the Households in Waste Treatment Management

Lingayen Area	Reuse	Used as Feeds	Used as Filling	Used as Food	Used for Ferment	Used for Handycraft
1. Eastern	42	19	5	7	3	6
2. Western	77	14	6	3	0	8
3. Southern	52	18	3	5	2	2
4. Central	68	13	2	9	3	8
Total	239	64	16	24	8	24
Percentage	64.59	17.3	4.32	6.49	2.16	6.49

From the table, it can be seen that 64.59% of the respondent households reuse their household wastes. Other alternative practices mentioned by a small group of households are “used as feeds” (17.3%), “used as handycraft” (6.49%) and “used as food” (6.49%).

Almost all of the institutions surveyed reuse their wastes particularly hotels and restaurants. They, together with the markets surveyed, also used their (biodegradable) wastes as feeds and (non-biodegradable) waste as handy crafts.

**Household perception towards M.O. No.2 s-2011**

The table below shows the general assessment of the households with regards to the implementation of M.O. No. 2, s-2011.

Table 4: Perception towards the Implementation of M.O. No.2, s-2011

Perception on the Implementation MO2 S2011	Well Implemented	Moderately Implemented	Barely Implemented	Not Implemented	No chance to Observe
1. Prohibition on the use of Styrofoam	21	174	90	83	2
2. Prohibition on the use of Plastic Bags on Dry Goods	71	158	79	60	2
3. Regulation on the Use of Plastic Bags on Wet Goods	27	145	136	57	5
4. Prohibition on Selling of Plastic Bags	38	125	140	55	12
5. Monitoring Effective Implementation of the Ordinance	24	123	173	45	5
6. Information and Education Campaign	36	107	155	67	5
7. Penalties and Enforcement	39	100	123	106	2

Of the households surveyed, 155 or 41.89 % view this policy on Information and Education campaign as just barely implemented with the average weighted mean equal to 3.28 – also descriptively equivalent to barely implemented.

#### **Barangay officials’ perception on the level of implementation of M.O. No.2 s-2011**

Perceptions of the barangay officials were also inquired to have some validation on the study’s findings. By virtue of their duties as administrator of the locality, barangay officials’ are in a position to have an extensive and functional view of the extent of implementation of the ordinance. In the end, comparison of the household and barangay officials perceptions were made using t test to know whether significant differences exist in their evaluation.

#### **Barangay Officials and Households Perceptions on the different Policy of MO No.2,s-2011**

Using t Statistical test for paired data, it can be said that all of the mean perception of the barangay officials except for the policy on penalties and enforcement – is significantly higher than the mean perception of the households. These findings would seem to indicate that barangay officials perceived the various policies of the ordinance as “moderately implemented” while the resident households are of the opinion that the policies are “barely implemented”.

#### **Barangay officials’ willingness to adopt and support SWM**

A significant proportion of the barangay officials are very willing to adopt/support programs and policies intended to improve Solid waste Management in the locality. Some of the programs with which they expressed a firm inclination are on “mandatory segregation of bins in all households”, “mandatory compost pit in all households”, “allocating barangay funds for garbage collection”, “mandatory MRF in all barangay”, “recycling program per barangay”, and “total banning of plastics”. Moreover, the surveyed barangay officials also expressed willingness with some reservation (23.5% or nearly one out of four barangay officials signified their opposition to such program) to collecting fees from households for garbage collection.

#### **Barangay officials’ perception on problems in the implementation of M.O. No.2, s-2011**

Local officials see the problem on uncontrolled use of packaging materials as serious and has recorded the highest mean seriousness problem. This would

suggest that the problem on packaging materials – such as Styrofoam and plastics – still constitutes the leading problem on the Solid Waste Management of the barangay. Other serious problem revealed by the study is on “difficulty in acquiring and locating landfill site”, “poor response to waste minimization of waste materials”, “lack of cooperation from the residents and concerned government agencies”, and “lack of equipment”.

#### **CONCLUSION AND RECOMMENDATION**

The respondents of this study employ poor solid waste management as evidenced by the following:

a. Less than half of the respondents segregate their solid waste regardless of cluster area they represent with the exemptions of institutions like hotel, restaurants, schools, market which practice segregation of biodegradable and non-biodegradable waste.

b. As a waste treatment method, dumping remains to be the most prevalent practice followed by selling, burying and burning. On the other hand, alternative practices such as re-using waste like bottles and glasses came out the most practiced.

c. On the household’s perceived compliance to Municipal Ordinance No.2,s-2011, almost all policies inherent to the ordinance were viewed as barely implemented except for one policy which is on Regulation on the Use of Plastic Bags on Wet Goods which was considered moderately implemented.

d. Barangay officials view all policies in the ordinance as moderately implemented except for policies and enforcement which is viewed as barely implemented.

e. Most barangay officials are willing to support and adopt SWM programs emanating from the municipal government particularly on recycling programs and establishment of Materials Recovery Facility.

f. Problems on SWM were perceived to be largely due to inadequate machine and equipment, lack of public cooperation and uncontrolled use of the ubiquitous packaging materials.

The LGU face a number of problems which hamper the adoption and /or compliance to M.O. No.2, s-2011. In view of this, the following recommendations are hereby proposed:

1. Intensify information-dissemination campaign on solid waste management be conducted to raise public awareness. Mainstreaming the campaign to barangay level enables more inclusive participation of the stakeholders. Recycling and composting



2. LGU should devise a system for mandatory segregation-at-source scheme to significantly reduce solid waste.

3. Monitoring and on the effective implementation of the ordinance should be looked into. A MENRO-designate must be dedicated to ensure proper and strict implementation of the ordinance. He or she should not be given additional assignment as market supervisor.

4. A firm committee be created to manage enforcement and give penalty to citizens who will not abide by the ordinance.

5. LGUs should reach out and build partnership with non-government organizations, private sectors and civic organization for additional resources.

6. Promote sustainable packaging and containers in various institutions to address problems on use of plastic and Styrofoam.

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Section 447 (vi) of R.A. 7160

Article II, Section 6 of the Philippine Constitution

Senate Bill No. 2759 (The Total Plastic Bag Ban Act of 2011)



Ecological Solid Waste Management Act of 2000 or  
R.A. 9003  
Ordinance No. 53, s-1996 or the Lingayen  
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