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Environmental Preservation: A "No Plastic" Ordinance Implementation in Urban Area

DAVE M. PASTORFIDE, MBA, LPT
Faculty Members, College of Management and Business Technology–Nueva Ecija University of Science and Technology San Isidro Campus, San Isidro, Nueva Ecija Philippines 3106

DANILO D. PASTORFIDE, MPA, LPT
Faculty Member, College of Management and Business Technology- Nueva Ecija University of Science and Technology, Sumacab Campus, Sumacab Este, Cabanatuan City, Nueva Ecija, Philippines 3100

Abstract:- The environment should be protected and maintain with the initiative of the local government. Cabanatuan City, Nueva Ecija, Philippines an urban area in the country implemented a "No Plastic" Ordinance under the Solid Waste Management (SWM) law to reduce the waste plastic collected, which is one of the wastes that last for hundred year be it dissolve naturally. Thus, this study is conducted to identify the implementation of the City on this ordinance. The study used a descriptive-quantitative research design, and the researcher-made questionnaire is the main instrument to gather the responses of the respondents. A total of 550 residents on selected Barangay in Cabanatuan City are the respondents, they are chosen using a convenience sampling. The result shows that, the local government unit of Cabanatuan city are successful in the implementation of the "No Plastic" ordinance, proper information dissemination and training and seminars are conducted to inform the residents of the city. It is also notable that residents are often segregating and recycling their waste before disposing it, thus reducing the collected waste.

Keywords:- *Plastics, Segregation, urban area, SWM, Ordinance.*

I. INTRODUCTION

One of the most common topics that are being talked about aside from the economic and political issues is environmental issue. The country faces environmental issue like waste mismanagement. Solid Waste is one of the most widely known problems that the earth is encountering.It is not just a problem in this country but also to other countries as well. Environmental contamination due to solid waste mismanagement is a global issue. Open dumping and open burning are the main implemented waste treatment and final disposal systems, mainly visible in low-income countries. (Ferronato and Torretta, 2019)There are a lot of studies and invention created to solve the environmental issues, specifically the waste management problem. Solid waste problem is the number one cause of today's issues and destruction of ecosystem. People can be ill by exposing themselves to hazardous waste in the environment; many of these are linked to environmental problems such as expose to mosquitoes, polluted drinking water, and poor waste disposal. Inadequate waste management changes the ecosystems, including contamination of the air, water and soil, thereby posing a real danger to human health. (Shafy and Masour, 2018) The need for solid waste management is now a growing problem due to continuous increase in population and industrial production. The global annual waste generation is projected to jump to 3.4 billion tons over the next 30 years up from 2.01 billion tonnes, driven by rapid urbanization and rising populations, according the report found. (The World Bank, 2018)

Philippine homes, businesses and industry generate millions of tons of solid waste annually.MSW comes from residential, commercial, institutional and industrialsources. Residential waste constitutes the bulk (56.7%) of MSW and includes kitchen scraps, yard waste, paper and cardboards, glass bottles, plastic containers and sando bags, foils, soiled tissues and diapers, and special wastes such as containers of household cleaning agents, batteries and waste electrical and electronic equipment (WEEE). Commercial sources which include commercial establishments and public or private markets contribute 27.1% of which, in some regions, about two- thirds of commercial wastes come from the latter. Institutional sources such as government offices, educational and medical institutions account for about 12.1% while the remaining 4.1% are waste coming from the industrial or manufacturing sector. (Philippine Environmental Management Bureau, 2018) While landfill disposal continues to be an option, new disposal facilities face strong public examination and are costly to site, build and operate. The department is constantly seeking alternatives to landfill disposal that are both environmentally protective and cost-effective for the consumer. (Missouri, 2017) Solid waste management permitting, monitoring and enforcement efforts can prevent illegal dumping and other factors that may cause long-term social, economic and environmental problems. (Missouri, 2017)Cabanatuan, officially the City of Cabanatuan, or simply Cabanatuan City is a 1st class city in the province of Nueva Ecija, Philippines. According to the 2015 census, it has a population of 302,231 people, making it the most populous city in Nueva Ecija and the fifth-most populous in Central Luzon. As of now it is considered the commercial, industrial and educational hub of the province and also known as the "Tricycle Capital of the Philippines". (Artsandculture, 2015) The increasing growth of garbage brought some health problems. Through the years, Cabanatuan City, Nueva Ecija has faced a severe garbage disposal that some garbage collectors can even form

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a mountain made out of garbage that mostly consists of plastic (e.g. fastfood condiments, plastic bags, etc.). The small town made a little step in protecting and helping for the betterment of our environment by the means of reducing the use of plastic materials—being the first environment-friendly city in the whole Region III, Central Luzon. Nueva Ecija Journal said that this was all possible after the city council passed Ordinance 015-2012 or the "No Plastic Ordinance" prohibiting the use of plastics bags and styrofoam containers in commercial establishments in the city. Market-goers are now required to bring their own eco-bag, basket or bayong when buying goods from markets or grocery stores. The ordinance also prohibits the use and sale of an offer to sell plastic bags in grocery stores, supermarkets, department stores, malls, food chains, restaurants, canteens, drug stores, market stalls, auto part shops and similar establishments. (A Spark, 2018)

To implement this ordinance, the City government conduct training and seminar about" No Plastic Ordinance ". It is open to all 89 Barangay of Cabanatuan City. With the leadership of the Barangay Captains a Barangay Solid Waste Management Committee was established. In implementing the program, each barangay will conduct compost making, as well as continuous advocacy training on waste management, clean and green and livelihood training seminars which among the activities undertaken and still on-going projects of each barangay. The said activities were clearly stipulated in RA 9003 known as "The Ecological Solid Waste Management Act of 2000". (Official Gazette, 2001) But it is still a question of requirements undertaken by the program if is successfully implemented. Thereby, it is deemed necessary to conduct the study implementation of existing laws on Solid Waste Management Disposal Trough "Ordinance 015-2012 or No Plastic Ordinance" in Cabanatuan City.

II. STATEMENT OF THE PROBLEM

The study aims to evaluate the "the Implementation of Ordinance 015-2012 or No Plastic Ordinance in the City of Cabanatuan. Specifically, the study will seek to determine the following: The disposal practices of the respondents in terms of; Garbage collection, Burning in the backyard, Compost pit. The proper waste disposal participation of the respondent in terms of; Garbage recycling and Garbage segregation. Lastly, Cabanatuan City Solid Waste Management assist the respondents in proper garbage disposal in terms of: Information dissemination; Conduct trainings and seminars.

III. METHODOLOGY

A descriptive research methodology was used for this study. Descriptive research is a quantitative research tool, aimed at collecting quantifiable data for statistical sample analysis. It is a common research tool that enables the essence of the population segment to be collected and represented. (QuestionPro.com) Descriptive research offers a relatively complete picture of what happens at some time and allows for further study questions to be developed at the same time. (Stangor, 2011) This study was conducted to determine the implementation of City Ordinance, thus descriptive research designed was used.

The respondents in this study were the 550 residents of selected Barangays in Cabanatuan City, Nueva Ecija, Philippine 3100. The research used a convenient sampling method. Convenience sampling is characterized as a method adopted by researchers where they collect research data from a conveniently available pool of respondents. It is the most widely used sampling method as it's extremely prompt, uncomplicated, and economical. In certain instances, the representatives of the study are easily available. (QuestionPro.com) As an effective data collection tool, the researchers used a survey questionnaires with close-ended questions. A research tool containing a set of questions for gathering information from respondents is a questionnaire. It could be regarded as an interview in writing. (McLeod, 2018).

The responses received from the respondents were organized, classified, tabulated, analyzed, and interpreted using frequency distribution, percentage, and ranking. Excel spreadsheet was used to make all the computations. Numerical and adjected values were used as follows:

Scale of Values	Scale of Range	Verbal Interpretations
5	4.60 – 5.00	**Always**
4	3.70 – 4.50	**Often**
3	2.80 – 3.60	**Sometimes**
2	1.90 – 2.70	**Seldom**
1	1.00 – 1.80	**Never**

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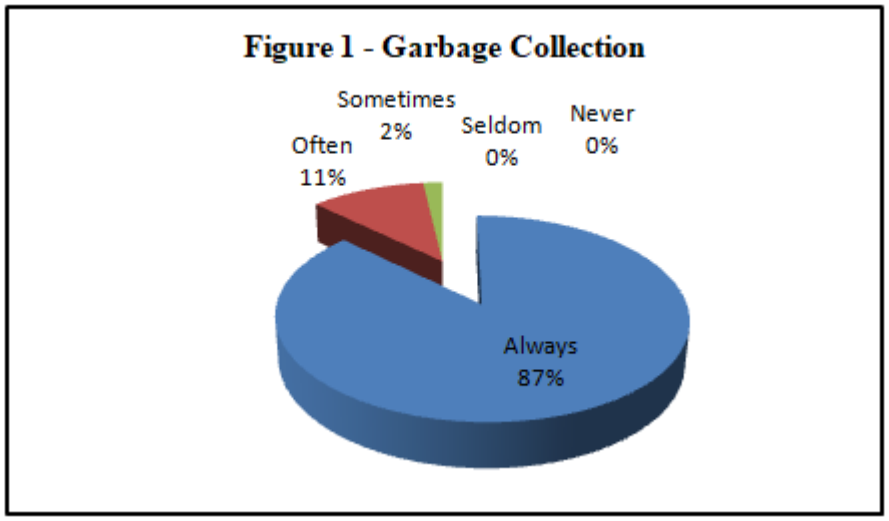
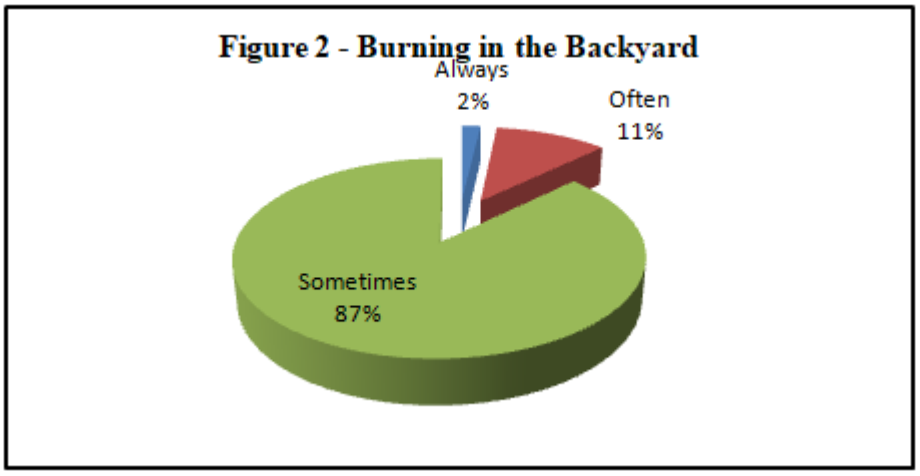
IV. RESULT AND DISCUSION

This section presents the survey results conducted concerning the implementation of the "No Plastic" ordinance in the city of Cabanatuan, Nueva Ecija, Philippines 3100.

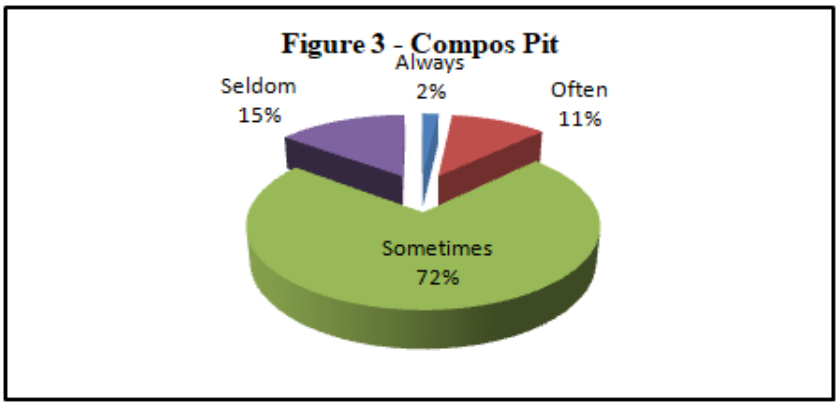
1. The disposal practices of the respondents in terms of; Garbage collection, Burning in the backyard, Compost pit.



The figure 1 above shows that majority or 87% of the respondents said that their garbage were "Always" collected per week, 11% said that it is "Often". However, there are 2% of the respondents that said it is sometimes. This data can be attributed to scheduled garbage collection implemented around cities and municipalities which is part of their solid waste management policy. The households rely on garbage collection by the government. Collection is done twice daily, except Sundays, and household members bring their garbage when the garbage truck arrives (Bernardo, 2008).



It can be illustrated from the figure 2 above that majority or 87% of the respondents are "sometimes" burning in the backyard. This data can be attributed that there are times that local governments missed the collection of household garbage that leads to burning it instead in the backyard. This option derived from the lack of efficient municipal waste collection schemes, and on the other hand, it is a traditional disposal route for agricultural wastes besides open dumping on the surroundings (Mihai, 2019). Thus, the government should ensure the regular collection of garbage to prevent households in burning their waste in their backyards.



It can be illustrated from the data above that majority or 72% of the respondents are "sometimes" doing compost pit. This data may imply that some household are doing segregation of biodegradable to non-biodegradable to put in compost pit. Thus,food scraps and yard waste together currently make up more than 30 percent of what we throw away, and could be composted instead (EPA.com).

2. The proper waste disposal participation of the respondent in terms of; Garbage recycling and Garbage segregation.

Table 1 – Recycling

No.	Indicator	Weighted Mean	Verbal Interpretation
1.	I have properly disposed my garbage and recycled the things that it can be used in other used.	**4.93**	**Always**
2.	I have personally advised my constituent in recycling the garbage before the garbage collector collect their garbage.	**4.76**	**Always**
3.	I can adjust in every situation and circumstances like time consuming in recycling my garbage to dispose it environmentally friendly.	**4.64**	**Always**
4.	I have disagreed with my constituent if they don't recycle their garbage to dispose their garbage using a recycling method whatever disposal they're used in an issue of garbage disposal.	**2.80**	**Sometimes**
5.	I experienced to disappointment if my constituent is not following the recycling method of disposing their garbage.	**2.31**	**Seldom**
Average Weighted Mean		**3.89**	**Often**

The Table 1 shows the recycling disposal of the respondents, the average weighted mean is 3.89 with verbal interpretation "Often". Questions no. 1,2, and 3 have a verbal interpretation "always" however, question no.4 "I have disagreed with my constituent if they don't recycle their garbage to dispose their garbage using a recycling method whatever disposal they're used in an issue of garbage disposal." has a verbal interpretation "Sometimes". Question no. 5 "I experienced to disappointment if my constituent is not following the recycling method of disposing their garbage." has a verbal interpretation "Seldom".

The data shows that majority of the households in urban areas are recycling their waste before disposing it. Although in question no. 5 "I experienced to disappointment if my constituent is not following the recycling method of disposing their garbage." that households are not concern whether their neighbors or constituents are doing the same. Furthermore, it is good know that majority of the respondents or households are consistently following the recycling process which is mentioned on question no. 1 "I have properly disposed my garbage and recycled the things that it can be used in other used." It can be concluded that environmental value is found to be a significant predictor for recycling behavior in both urban areas (Latif et. Al, 2012).

Table 2 – Segregation

No.	Indicator	Weighted Mean	Verbal Interpretation
1.	To Prevent Mix Ups at Landfills and Avoid Toxic Emissions	**4.16**	**Often**
2.	To Reduce Chances of Infection	**4.00**	**Often**
3.	Reduce Impact on Climate Change	**3.60**	**Sometimes**
4.	Reduce Wastage and Encourage Recycling	**2.93**	**Sometimes**
5.	It Is Free and Can Help You Reuse	**4.47**	**Often**
Average Weighted Mean		**3.83**	**Often**

The table 2 show the segregation of households, the data shows the average weighted mean of 3.83 with verbal interpretation "Often". Question no. 1,2,5 have a verbal interpretation "Often". However, question no. 3 "Reduce Impact on Climate Change" has a weighted mean 3.60 and a verbal interpretation "Sometimes", question no. 4 "Reduce Wastage and Encourage Recycling" has a weighted mean 2.93 and a verbal interpretation "Sometimes".

It can be illustrated that most of the households are "Often" segregating their waste before disposing it can imply that households are aware n segregation in urban areas. According to Banga (2011), activities for solid waste segregation depend on awareness level of operations in the area of recycling. However, it can be notice on question no. 3 and 4 are only "sometimes" done my respondents. It can be concluded that household are aware of waste segregation but not able to recycle waste that is recyclable. Thus, according to Matter et. al, (2013), any plan aimed at improving the segregation of sources and the access to more recyclables must consider all of the "integrated" dimensions of waste management systems that impact and decide sustainability and improvement.

Table 3 – Information Dissemination

No.	Indicators	Weighted Mean	Verbal Interpretation
1.	Discussed project activities on the local radio.	**4.93**	**Always**
2.	Publishing information in the local newspaper.	**4.76**	**Always**
3.	Presented program results to local community groups and other local stakeholders.	**4.64**	**Always**
4.	Created and distributing program materials, such as flyers.	**2.80**	**Sometimes**
5.	Hosted health promotion events at health fairs and school functions.	**2.31**	**Sometimes**
Average Weighted Mean		**3.89**	**Often**

The table 3 shows the information dissemination done by the city government in the urban areas. The average weighted mean is 3.89 with verbal interpretation "Often", question no. 1,2,3, have a verbal interpretation "Always". Question no. 4 and 5 have verbal interpretation "Sometimes".

These data can be attributed to initiative of the local government on disseminating information about the "NO Plastic Ordinance" under the law of solid waste management (SWM) done in the urban areas. On the study conducted by Omran and Gebril, (2011), shows that government initiative are advertising campaigns via the newsprint and electronic media have over the years been conducted continuously in addition to other forms of disseminating information, such as conferences, seminars and meetings.

Table 4 – Conduct Training and Seminars

No.	Indicators	Weighted Mean	Verbal Interpretation
1.	Conduct training in the awareness of the people of the negative effect of improper waste disposal in their health.	**4.16**	**Often**
2.	To educate the people regarding the different consequences of the improper waste disposal in the environment.	**4.00**	**Often**
3.	To inform the people that they can earn money from the recycled materials such as papers, plastics, and bottles.	**3.60**	**Sometimes**
4.	To make them a partner in taking care, the environment by following the laws about the proper waste disposal	**2.93**	**Sometimes**
5.	To make them a trainer and advocate about the law-abiding citizens either after the seminars and training attended.	**4.47**	**Often**
AverageWeighted Mean		**3.83**	**Often**

The Table 4 above shows the Conduct of training and Seminars of the local government unit in urban areas. It has an average weighted mean of 3.83 with verbal interpretation "Often". Questions no. 1,2, and 5 have a verbal interpretation of "Often". However, questions no. 3 and 4 have a verbal interpretation "Sometimes".

The data implies that the local government units are "Often" conducting trainings and seminars to inform the households regarding the solid waste management in the "No Plastic Ordinance of the city". Detailing the table above shows that question no. 3 "To inform the people that they can earn money from the recycled materials such as papers, plastics, and bottles." Are only "sometimes" informed to households. Thus, most households do not know what to do if they recycled this material. However, it is notable that Question no. 1 "Conduct training in the awareness of the people of the negative effect of improper waste disposal in their health." Are often conduct, therefore it can be concluded that household are properly informed and trained on the ordinance implemented by the local government.

V. CONCLUSION AND RECOMMENDATION

From the data above, a conclusion was made. The researcher concluded that the implementation of "No Plastic Ordinance" in the urban area are properly implemented by the local government unit (LGU). Garbage collection are always done by the LGU, however, burning and compost pit are sometimes done by different household due to sometimes LGU are not able to collect their garbage on schedule. The Recycling practices in the urban areas that is part of the Solid Waste Management are often done by the households, this also the same with their segregation practices. The information dissemination, training and seminars conducted to inform the residents of the city regarding the implementation of the "NO Plastic Ordinance" are properly implemented as the respondents are "often" informed and attended seminars and training about the ordinance. Thus, the city is successful on the proper implementation of the said ordinance in the city.

The researchers strongly suggest that, the city should focus on the training of household on recycling their waste in connection to their segregation to continuously reduce the waste collected by the city. It is also suggesting that resident should continuously follow the ordinance of the city as it helps on the preservation and maintaining the environment clean and safe for the next generation. Further research should also be measure conducted to identify the compliance of the households as well as the business establishments within the city.

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