



# Implementation of Environmental Conservation Ordinances in Mangaldan, Pangasinan

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**Abstract** - Despite the numerous environmental laws anywhere in the world nowadays, it is contentious how environmental problems are still prevalent. The sorry state of the Earth implies that such laws are not adequately enforced. Hence, this study was conducted to determine the level of implementation of environmental conservation ordinances implemented in the municipality of Mangaldan—the Land, Air and Water Resources Management and Banning of Plastic—and the problems encountered in their implementation as perceived by the constituents of the six randomly selected barangays in the municipality. The profile of the respondents was also determined. Moreover, this study made use of descriptive survey method of research. Survey questionnaires were administered with informal interviews to supplement the data gathered. There were 392 respondents out of 19,494 total population. The data were tabulated using frequency counts, percentage distribution, and average weighted mean. This study revealed that the level of implementation of most environmental conservation ordinances in the six barangays calls for a more effective and strict enforcement mechanism. Moreover, with the discovered problems encountered in the implementation of the ordinances, the researchers recommended that the LGU Mangaldan should make a more dynamic environmental education and assess its environmental conservation ordinances by using the Organisation for Economic Co-operation and Development's- Development Assistance Committee (OEC-DAC) Evaluation Criteria: Effectiveness, Efficiency, Sustainability, Relevance, and Impact for more scrutiny and knowledge on the status of the said ordinances.

**Keywords:** implementation, environmental conservation, environmental conservation ordinances.

## INTRODUCTION

As adverse as it may sound, humanity's planet life is hanging by a thread that becomes more likely to fall every moment people turn their eyes blind to the bigger picture of its plight. Letting the environment become worn out, individuals will bear the severe effect of the debris of their ignorance. Thus, people's high level of awareness of environmental concerns and the effective implementation of environmental laws should become everyone's priority.

Environmental issues and challenges are not new. Laws concerning the conservation of the environment are numerous. However, the question is: are these laws being appropriately implemented

and followed by the people? With the ongoing massive environmental problems anywhere in the world, the answer is a resounding "no."

In a protest organized by the Scientist Rebellion in Los Angeles, California, a National Aeronautics and Space Administration (NASA) scientist named Peter Kalmus urged the public to take immediate and collective actions to save the Earth (Morales, 2022). He reiterated that the planet is slowly dying, and people only have a few years to turn the situation upside down, or else they will suffer the most painful effect of their dereliction—losing everything.

As modernization continues, seemingly irreversible environmental problems are incessantly rising, with humanity being the only game-changer that can turn the dreadful situation into something favorable.

In Nigeria, various environmental problems such as, among others, water and air pollution, deforestation, desertification, flooding, and erosion, have become prevalent. These problems were propelled by Nigerians'—especially those living in the local area—low levels of awareness of environmental concerns (Budnukaeku & Hyginus, 2021). Moreover, environmental laws' implementation inefficiencies have also been the culprit behind the surroundings' degradation (Budnukaeku & Hyginus, 2021).

Furthermore, citizens in Bangladesh face massive environmental crises such as pollution and climate change. In 2021, Bangladesh was ranked 1st in IQAir's report of "World's Most Polluted Countries." Studies revealed that the inefficient enforcement of numerous environmental laws had driven the environmental turmoil the country is facing. According to Sarwar (2022), the implementation of a multitude of environmental-related legislation in Bangladesh is faced with several challenges such as, among others, "lack of specificity, procedural complexities, lack of accountability, partisan state machinery, and the absence of environmental consciousness among the common people."

Meanwhile, in 2015, the Philippines ranked as the world's third-biggest plastic polluter, with about 2.7 million metric tons of plastic garbage created annually, according to research by the World-Wide Fund for Nature (Gomez, 2021). In addition, prior to the lockdown, the Philippines was listed as the 57th most polluted country in the world—out of 98 countries—by IQAir (Sabillo, 2020). The aforementioned pieces of data are very alarming, implying that the country needs to implement its environmental laws efficiently.

Similar to other countries, as justified above, the Philippines is faced with disturbing environmental problems despite having various environmental conservation laws. Among the environmental laws in the Philippines, as cited by Maglucot (2021), are the following: (1) Republic Act (RA) 9003 or the "Ecological Solid Waste Management Act of 2000" which forbids the disposal of wastes in public areas like streets or canals; (2) RA 9275 or the "Philippine Clean Water Act of 2004" where disposal of wastes in water resources is prohibited;

(3) Presidential Decree (PD) 705 "Forestry Reform Code of the Philippines" which forbids unlawful tree-cuttings;

(4) RA 3571 or "an act to prohibit the cutting, destroying or injuring of planted or growing trees, flowering plants and shrubs or plants of scenic value along public roads, in plazas, parks, school

premises or in any other public ground;" (5) RA 8749 or the "Philippine Clean Air Act of 1999" which prohibits the use of smoke belching vehicles; and (6) RA 8550 or the "Philippine Fisheries Code of 1998" which prohibits any activity that destroys marine ecosystem such as unlawful/illegal fishing (p. 421).

In the municipality of Santa Cruz, Laguna, Rivano (2018) has determined the shortcomings of RA 9003 or the "Ecological Solid Waste Management Act of 2000." He discovered that most people in the said locality are moderately compliant and slightly aware of some of the law's provisions calling for its stricter and more efficient implementation (Rivano, 2018).

In 2017, Municipal Ordinance No. 2017 - 106, or the Environment Code in Mangaldan, was enacted. It is supplemented with various environmental conservation ordinances enacted through the years by the Sangguniang Bayan. Despite having these various environmental conservation-related ordinances, it was found in 2018 that massive amounts of residual waste are being collected in the municipality: five to six tons of residual waste weekly from Barangays Poblacion and Banaoang alone (Austria, 2018). As a first-class municipality close to becoming a city, Mangaldan, at present, will be prone to environmental problems due to ongoing changes and development if its environmental code is not implemented correctly.

In Pangasinan, Mangaldan is one of the few municipalities that have environmental conservation laws that are codified. Since the code was enacted in 2017, the researchers find it a perfect time to determine the level of implementation of various environmental conservation ordinances provided in the code's provision for the municipality to see if there is a need for revitalization and improvements. Moreover, since it has already been five years since the code was enacted, there is a need for a thorough study to determine the environmental ordinances' level of implementation to assess if it has been effective, efficient, and sustainable.

From the above perspectives, this study was conducted to determine the level of implementation of environmental conservation ordinances in the municipality of Mangaldan and the problems encountered in their implementation.

## **Objectives of the Study**

This study aimed to determine the level of implementation of environmental conservation ordinances in Mangaldan.

Furthermore, it sought to address the following questions:

1. What is the profile of the respondents in terms of:
  - 1.1 age;
  - 1.2 sex;
  - 1.3 civil status,
  - 1.4 monthly family income, and
  - 1.5 highest educational attainment?
2. What is the level of implementation of the following environmental conservation ordinances in Mangaldan:
  - 1.1 Land Resource Management,

- 1.2 Solid Waste Management,
- 1.3 Regulating Non-Biodegradable Plastic and Styrofoam,
- 1.4 Water Resource Management, and
- 1.5 Air Quality Management?
3. What are the problems encountered in the implementation of environmental conservation ordinances in Mangaldan?

## METHODOLOGY

In this study, the descriptive-survey method of research was employed. The study's respondents were the constituents of Mangaldan, randomly chosen from the six barangays near the riverside: Landas, Macayug, Embarcadero, Salaan, Guesang, and Navaluan.

The barangays mentioned above were selected using a simple random sampling technique, specifically the lottery method. The researchers randomly pick numbers, each corresponding to a barangay in Mangaldan. The researchers used a computer program—the picker wheel—to perform the method.

Out of the 30 barangays in the municipality, the said six barangays were chosen. The population of each barangay is based on the “2022 PSA Census & MPT Computation,” which the researchers obtained from the Municipal Planning and Development Council of Mangaldan.

Meanwhile, the sample size for the respondents is determined using the Slovin’s formula with 0.05 as the margin of error (e).

Table 1 below presents the distribution of the respondents in this study.

BARANGAY	N	n
Landas	2664	54
Macayug	2687	54
Embarcadero	2790	56
Salaan	3012	61
Guesang	4116	83
Navaluan	4225	84
<b>Total</b>	<b>19,494</b>	<b>392</b>

The main data gathering tool used in this study was a questionnaire developed by the researchers themselves based from the provisions of the Municipal Ordinance No. 2017 - 106, or the Environment Code in Mangaldan. The questionnaire was also aligned with the objectives of the study and was divided into three parts: Part I. Profile of the Respondents, Part II. Level of Implementation of Environmental Conservation Ordinances in Mangaldan, Pangasinan, and Part III. Problems Encountered in the Implementation of Environmental Conservation Ordinances in the said

municipality. For Part II of the questionnaire, the researchers provided the main policies of each ordinance, which the target respondents rated. Meanwhile, for Part III, the researchers created a questionnaire of the problems encountered in the implementation of environmental conservation by providing qualifying statements that are based mainly on the related literature and studies of the research. Also, the questionnaire was subjected to validation by experts.

Rights to self-determination, anonymity, nondisclosure agreements, and informed consent were observed throughout the procedure, particularly during data collection and result formulation, to ensure ethical concerns.

For better and dependable results of the study, statistical tools were used. To interpret the profile of the respondents and the problems encountered in the implementation of environmental conservation ordinances, frequency counts and percentage distribution were used. Meanwhile, the problem concerning the level of implementation of environmental conservation ordinances in Mangaldan made use of the Average Weighted Mean (AWM).

## RESULTS AND DISCUSSION

This study focused on determining the level of implementation of environmental conservation ordinances in Mangaldan, Pangasinan as perceived by the constituents of the six selected barangays in the municipality. It also sought to determine the profile of the respondents and the problems encountered in the implementation of the aforementioned ordinances.

### Profile of the Respondents

Table 2 on the next page presents the profile of the respondents according to age, sex, civil status, highest educational attainment and monthly family income.

*Table 2. Profile of the respondents*

	Landa		Macayug		Embarcadero		Salapa		Guising		Navaluna		Overall Total	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%
<b>Age</b>														
50 and above	8	11%	4	7%	8	14%	8	13%	14	17%	9	11%	49	13%
51-59	9	17%	15	28%	8	11%	9	15%	8	10%	11	13%	58	15%
41-60	7	13%	7	13%	11	20%	10	16%	17	20%	14	17%	68	17%
31-40	12	22%	9	17%	11	19%	10	16%	9	11%	16	19%	67	17%
21-30	11	20%	7	13%	13	23%	13	21%	19	23%	18	21%	81	21%
18-20	9	17%	12	22%	7	13%	11	18%	16	19%	16	19%	71	18%
<b>Total</b>	<b>54</b>	<b>100%</b>	<b>54</b>	<b>100%</b>	<b>56</b>	<b>100%</b>	<b>61</b>	<b>100%</b>	<b>83</b>	<b>100%</b>	<b>84</b>	<b>100%</b>	<b>392</b>	<b>100%</b>
<b>Total</b>														
<b>Sex</b>														
Male	25	48%	20	37%	14	25%	28	43%	34	41%	41	49%	180	41%
Female	29	54%	34	63%	42	75%	35	57%	49	59%	43	51%	232	59%
<b>Total</b>	<b>54</b>	<b>100%</b>	<b>54</b>	<b>100%</b>	<b>56</b>	<b>100%</b>	<b>61</b>	<b>100%</b>	<b>83</b>	<b>100%</b>	<b>84</b>	<b>100%</b>	<b>392</b>	<b>100%</b>
<b>Civil Status</b>														
Single	19	35%	18	33%	25	42%	28	48%	36	43%	37	44%	163	42%
Married	28	52%	28	52%	23	40%	25	41%	37	45%	38	45%	179	46%
Widower	5	9%	3	6%	5	9%	8	13%	8	10%	5	6%	34	9%
Separated	2	4%	5	9%	3	4%	0	0%	2	2%	4	5%	16	4%
<b>Total</b>	<b>54</b>	<b>100%</b>	<b>54</b>	<b>100%</b>	<b>56</b>	<b>100%</b>	<b>61</b>	<b>100%</b>	<b>83</b>	<b>100%</b>	<b>84</b>	<b>100%</b>	<b>392</b>	<b>100%</b>
<b>HEA</b>														
Elem. Graduate	7	13%	9	17%	10	18%	8	13%	9	11%	13	15%	58	14%
Elem.Undergrad	0	0%	1	2%	3	5%	0	0%	2	2%	5	6%	11	3%
HS Graduate	20	37%	16	30%	15	27%	28	43%	27	33%	38	45%	142	36%
HS Undergraduate	6	11%	18	33%	11	20%	12	20%	24	29%	12	14%	83	21%
College Graduate	14	26%	4	7%	3	5%	5	8%	14	17%	5	6%	45	11%
College Undergrad.	2	4%	3	6%	3	5%	6	10%	5	6%	3	4%	22	5%
Vocational	0	0%	2	4%	4	7%	0	0%	2	2%	1	1%	4	1%
With Masteral Units	1	2%	1	2%	2	4%	0	0%	0	0%	0	0%	4	1%
Masteral Degree	2	4%	0	0%	2	4%	0	0%	0	0%	4	5%	11	3%
Doctorate Degree	0	0%	0	0%	3	5%	1	2%	0	0%	3	4%	9	2%
<b>Total</b>	<b>54</b>	<b>100%</b>	<b>54</b>	<b>100%</b>	<b>56</b>	<b>100%</b>	<b>61</b>	<b>100%</b>	<b>83</b>	<b>100%</b>	<b>84</b>	<b>100%</b>	<b>392</b>	<b>100%</b>
<b>MFI</b>														
P 31,000 above	8	11%	0	0%	6	11%	5	8%	5	6%	10	12%	32	8%
P 26,000-30,000	10	19%	1	2%	2	4%	4	7%	5	6%	5	6%	27	7%
P 21,000-25,000	12	22%	7	13%	0	0%	5	8%	12	14%	4	5%	40	10%
P 16,000-20,000	19	35%	16	30%	8	14%	18	30%	12	14%	8	10%	81	21%
P 11,000-15,000	7	13%	16	30%	13	23%	6	10%	21	25%	26	31%	89	23%
P 6,000-10,000	0	0%	8	15%	5	9%	11	18%	20	24%	9	11%	53	14%
P 6,000 below	0	0%	6	11%	22	39%	12	20%	8	10%	22	26%	70	18%
<b>Total</b>	<b>54</b>	<b>100%</b>	<b>54</b>	<b>100%</b>	<b>56</b>	<b>100%</b>	<b>61</b>	<b>100%</b>	<b>83</b>	<b>100%</b>	<b>84</b>	<b>100%</b>	<b>392</b>	<b>100%</b>

Based on analysis of the gathered data, the researchers came up with the following findings: As to profile, most of the respondents are 21-30 years old, female, married, high school graduates, and have a monthly family income ranging from ₱11,000-15,000.

Moreover, table 3 shows the respondents' assessment of the level of implementation of environmental conservation ordinances in Mangaldan, Pangasinan.

*Table 3. Level of Implementation of Environmental Conservation Ordinances*

	Lan		Mac		Emb		Sal		Gue		Nav		Overall	
	AWM	DR												
<b>A. LAND RESOURCE MANAGEMENT</b>														
1. Prohibition of littering in tourism areas and any public areas.	1.78	NI	1.83	SI	2.5	SI	3.05	MI	2.01	SI	2.31	SI	2.25	SI
2. Year-round Clean and Green Program.	3.31	MI	3.11	MI	2.57	MI	3.23	MI	3.02	MI	2.61	MI	2.98	MI
3. Banning of Open-Burning.	1.22	NI	1.52	NI	1.63	NI	1.62	NI	1.33	NI	1.56	NI	1.48	NI
4. Regular desiltation, de-clogging and dredging of canals and drainage systems.	3.37	MI	2.85	MI	3.5	MI	2.97	MI	2.90	MI	2.74	MI	3.06	MI
<b>TOTAL AWM</b>	<b>2.42</b>	<b>SI</b>	<b>2.33</b>	<b>SI</b>	<b>2.55</b>	<b>SI</b>	<b>2.72</b>	<b>MI</b>	<b>2.32</b>	<b>SI</b>	<b>2.31</b>	<b>SI</b>	<b>2.44</b>	<b>SI</b>
<b>B. Solid Waste Management</b>														
1. Mandatory Waste Segregation.	2.24	SI	1.78	NI	2.30	SI	2.75	MI	2	SI	2.69	MI	2.29	SI
2. System of proper collection and transportation of solid waste.	1.11	NI	1.43	NI	1.34	NI	1.84	SI	1.37	NI	1.80	SI	1.48	NI
3. Composting of Agricultural Waste and other compostable materials.	3.33	MI	3.15	MI	3.05	MI	3.48	I	2.60	MI	2.69	MI	3.05	MI
4. Prohibition of littering, throwing, dumping and open burning of waste materials in public places.	1.70	NI	1.56	NI	1.70	NI	2.95	MI	1.87	SI	2.06	SI	1.97	SI
<b>TOTAL AWM</b>	<b>2.10</b>	<b>SI</b>	<b>1.98</b>	<b>SI</b>	<b>2.10</b>	<b>SI</b>	<b>2.76</b>	<b>MI</b>	<b>1.96</b>	<b>SI</b>	<b>2.31</b>	<b>SI</b>	<b>2.20</b>	<b>SI</b>
<b>C. REGULATING NON-BIODEGRADABLE PLASTIC AND STYROFOAM</b>														
1. Prohibition of the use of plastic bags, styrofoam, plastic containers, styrofoam, among other non-biodegradable materials.	1.17	NI	1.33	NI	1.34	NI	1.41	NI	1.20	NI	1.46	NI	1.31	NI
2. Prohibition of the usage and selling of plastic bags and Styrofoam in any business establishments.	1.20	NI	1.35	NI	1.30	NI	1.44	NI	1.23	NI	1.38	NI	1.32	NI
3. Mandatory use of eco-bag.	1.48	NI	1.48	NI	1.61	NI	1.49	NI	1.49	NI	1.68	NI	1.54	NI
4. The use of alternative containers and other packaging materials, other than eco-bags.	1.65	NI	1.54	NI	1.66	NI	1.43	NI	1.37	NI	1.63	NI	1.55	NI
<b>TOTAL AWM</b>	<b>1.38</b>	<b>NI</b>	<b>1.43</b>	<b>NI</b>	<b>1.48</b>	<b>NI</b>	<b>1.44</b>	<b>NI</b>	<b>1.32</b>	<b>NI</b>	<b>1.54</b>	<b>NI</b>	<b>1.43</b>	<b>NI</b>
<b>D. WATER RESOURCE MANAGEMENT</b>														
1. Sustainable utilization of water resources.	4.48	HI	4.13	I	4.07	I	3.82	I	4.11	I	3.89	MI	4.08	I
2. Prevention and control of water pollution.	3.80	MI	4.07	I	2.95	MI	3.64	I	3.93	MI	3.21	MI	3.6	I
3. Conservation and protection of aquatic resources.	3.37	MI	4.06	I	3.33	MI	3.89	I	4.01	I	3.30	MI	3.66	I
4. Prohibition of the illegal dumping of solid wastes into the rivers and creeks and any body of water.	2.78	MI	3.35	MI	2.93	MI	3.56	I	2.73	MI	2.94	MI	3.05	MI
<b>TOTAL AWM</b>	<b>3.61</b>	<b>I</b>	<b>3.90</b>	<b>I</b>	<b>3.32</b>	<b>MI</b>	<b>3.73</b>	<b>I</b>	<b>3.70</b>	<b>I</b>	<b>3.34</b>	<b>MI</b>	<b>3.60</b>	<b>I</b>
<b>E. AIR QUALITY MANAGEMENT</b>														
1. Anti-smoke belching.	2.78	MI	2.70	MI	2.88	MI	3.57	MI	2.95	MI	3.20	MI	3.01	MI
2. No smoking in public places.	1.95	SI	2.30	SI	2.48	SI	2.90	MI	2.24	SI	2.93	MI	2.47	SI
3. Prohibition of open burning.	1.19	NI	1.28	NI	1.55	NI	1.77	NI	1.28	NI	1.71	NI	1.46	NI
4. Measures for noise and vibration reduction.	3.83	I	2.89	MI	2.89	MI	3.80	MI	2.91	MI	3.01	MI	3.22	MI
<b>TOTAL AWM</b>	<b>2.44</b>	<b>SI</b>	<b>2.29</b>	<b>SI</b>	<b>2.45</b>	<b>SI</b>	<b>3.01</b>	<b>MI</b>	<b>2.35</b>	<b>SI</b>	<b>2.71</b>	<b>MI</b>	<b>2.54</b>	<b>MI</b>

As reflected in table 3, Salaan is the only barangay with a mean equivalent to a descriptive rating of "moderately implemented" in land resource management; the rest are "slightly implemented" with a mean ranging between 1.80-2.59.

It can also be gleaned from the table that 2 out of 4 activities of land resource management were rated by the respondents as "moderately implemented," which are the year-round Clean and Green Program and regular desiltation, de-clogging, and dredging of canals and drainage systems. This suggests that the efforts of the implementers are still lacking, thus preventing them from fully implementing the activities. Meanwhile, the prohibition of littering in tourism areas and any public areas were rated as "slightly implemented." It implies that the implementers are lenient in their implementation, calling for a stricter enforcement mechanism than ever. The claim is supported by the fact that half of the respondents in all six barangays perceived that the implementers were uncoordinated and not doing their work.

In addition, in all barangays, it can be noticed that the banning of open burning activity is "not implemented." This can be attributed to the fact that there are various problems encountered in its

implementation, among others is the lack of discipline/ disobedience of people towards the ordinance and its provision and having no strict consequences or punishments for violators—such are perceived by a high percentage of respondents, as reflected in table 4.

As a whole, the level of implementation of land resource management was rated as “slightly implemented,” as verified by the overall weighted mean of 2.44. The data suggest that the respondents were not satisfied with the implementation of the said ordinance and its main provisions. It also implies that the LGU should gravitate towards a more effective enforcement mechanism to implement the ordinance and achieve its objectives fully.

Furthermore, it can likewise be observed from the table that only Barangay Salaan got a descriptive rating of “moderately implemented” in solid waste management, and the rest are “slightly implemented.” On the other hand, out of the four activities of Solid Waste Management, the system of proper collection and transportation of solid waste was rated by the respondents as “not implemented.” This is due to the fact that there has been no collection of waste in the six barangays, as commented on by the majority of respondents/informants during the conduct of the informal interview. The non- collection of waste made the constituents resort to the open burning of waste. It may be the reason why the banning or prohibition of open burning in land resources and air quality management is “not implemented” at all. Thus, the LGU should have a system of proper collection and transportation of solid waste in all barangays and not just in selected areas.

Meanwhile, the constituents rated the mandatory waste segregation, composting of agricultural wastes and other compostable materials, and prohibition of littering, throwing, dumping, and open burning of waste materials in public places as “slightly implemented.” In general, the overall weighted mean of 2.20 suggests that solid waste management is “slightly implemented” in the six barangays. It coincides with the level of implementation of the land resource management, which is also rated by the respondents as “slightly implemented.” Likewise, this suggests that the enforcement arm of the ordinance should have an effective enforcement mechanism for more comprehensive and consistent implementation.

Moreover, it can also be gleaned that all the main provisions of the regulating non-biodegradable plastic and Styrofoam ordinance were rated as “not implemented” in all barangays. This is because the municipality has failed to sustain its implementation at present. This claim can be justified by the fact that more than half of the respondents in this study, as reflected in table 4, perceived the unsustainable implementation of the various environmental conservation ordinances implemented in the municipality as a problem.

Also, based on the table, 2 out of 6 barangays—Embarcadero and Guesang—has a total weighted mean ranging between 2.60-3.39, equivalent to a descriptive rating of “moderately implemented” in the water resource management. On the other hand, the said ordinance’s total mean in the four barangays not mentioned was rated by the respondents as “implemented.” It suggests that the water resource management in Barangay Embarcadero and Guesang is not as strictly enforced as in other barangays.

It can also be observed that only one out of the four activities in water resource management were rated by the respondents in all barangays as “moderately implemented,” which is the prohibition

of the illegal dumping of solid wastes into the rivers and creeks and any body of water; the rest activities were rated as “implemented.”

Meanwhile, the overall weighted mean of 3.60 shows that water resource management in all six barangays is “implemented.” This implies that the municipality of Mangaldan is committed to conserving its rich aquatic resources. In fact, in 2019, the Alpha Phi Omega (APO) United International Organization, Inc., together with the LGU of Mangaldan held a service project—simultaneous cleanup drive activity in Mangaldan river to revert its pristine beauty and protect its marine ecosystem (APO United Web Team, 2019). In the past few years, the municipality has held projects and other causes that will conserve its water resources.

Finally, in the last part of Part 2, Barangay Salaan and Navaluan have an overall mean ranging from 2.60-3.39 when it comes to air quality management which translates to a descriptive rating: “moderately implemented.” On the other hand, the remaining barangays’ respondents rated the said ordinance as “slightly implemented.” It is also noticed that two out of 4 activities in air quality management were rated as “moderately implemented,” which are the anti-smoke belching and measures for noise and vibration reduction. Meanwhile, the no smoking in public places was rated as “slightly implemented,” likewise suggesting that the implementers are doing mediocre actions in implementing the policy. As expected, the open burning is “not implemented” in all six barangays which, apparently, due to the fact that there has been no collection of waste in these barangays and some people, if not most, are undisciplined and disobedient to the ordinance, among other problems.

Table 4 presents the problems encountered in the implementation of environmental conservation ordinances in the six barangays.

*Table 4. Problems Encountered in the Implementation of Environmental Conservation Ordinances in the Six Barangays*

Problems	Frequency	Percentage	Rank
A. Insufficient resources (financial resources, human resources, infrastructure facilities) to implement the environmental ordinances.	152	39%	7.5
B. Lack of discipline/disobedience of people towards the environmental ordinances	346	88%	1
C. Lack of information drives about the environmental ordinances	276	70%	2
D. Low community participation and awareness on environmental ordinances	240	61%	3
E. People's misunderstanding of the environmental ordinances provision	153	39%	7.5
F. Unsustainable implementation of the various environmental conservation ordinances implemented in the municipality.	215	55%	5
G. No strict consequences or punishments for violators of environmental ordinances	238	61%	4
H. Lack of support from the national government, civil society and the private sector.	97	25%	9
I. Implementers are uncoordinated and not doing their work	196	50%	6
J. Others please specify:			

Table 4 shows the frequency and percentage of the problems encountered in the implementation of environmental conservation ordinances in the six barangays of Mangaldan, Pangasinan, ranked from 1-9 as perceived by the respondents. It can be gleaned from the table that people's lack of discipline/disobedience towards the environmental ordinances ranked first with 88%. This indicates that the ordinances' failure to achieve their goal of protecting and conserving the environment is caused by the people who are irresponsible and noncompliant with the laws. Some respondents mentioned:

“Talagang maraming tao rito na walang disiplina; nagtatapon kung saan-saan, nagsusunog, nagsisigarilyo kahit bawal. Matigas talaga ang ulo nila.” (There are really a lot of people here who do not have discipline; throwing everywhere, burning, smoking even though it's illegal. They are stubborn.)

“Para sa akin, maraming ‘di sumusunod talaga sa mga batas sa paligid. Yan yung pinakaproblema kung bakit sobrang dumi rito sa amin.” (For me, there are many people who don't really follow the laws concerning the environment. That's the biggest problem why it's so dirty in our area.)

“Hindi naman sa naninira ako ng mga ka-barangay ko, pero pagdating sa mga ganyang bagay [tungkol sa paligid] wala silang paki-alam; mga dugyot.” (It's not that I'm slandering my neighbors, but when it comes to such things [about the environment] they don't care; they are filthy.)

In the study of Ezaki and Vargas (2021), the problem was also discovered. The students' lack of discipline in Camarines Norte State College Labo Campus towards environmental laws, specifically the R.A 9003, has been the top problem encountered in the said law's implementation as perceived by the students of the campus themselves.

Moreover, the rank two (2) problem encountered as perceived by the respondents is the lack of information drives about the environmental conservation ordinances. The problem lends substance to the fact that the municipality needs to raise the awareness of the constituents in the barangays on such ordinances. One of the respondents remarked, “Hindi ko naman alam na may ordinansa pala tungkol sa pagtatapon ng basura, pagsusunog tapos paggamit ng plastic. Wala namang nagsasabi dito sa amin.” (“I didn't know there was an ordinance about throwing garbage, burning it and then using plastic. No one tells us here).)

The abovementioned problem is connected to the third perceived problem, which is the low community participation and awareness on environmental ordinances that garnered 61%. It can be said that without access to information regarding environmental laws, the implementers cannot anticipate the voluntary compliance and participation of followers toward the attainment of the objectives of those laws. As stated by one of the respondents/informants of the study, “Hindi naman lahat nakikisama kapag may clean-up drive dito sa amin kasi puro mga 4Ps [Pantawid Pamilyang Pilipino Program] beneficiaries yung required na maglinis. At saka tamad din yung ibang mga tao dito.” (Not everyone joins us when there is a clean-up drive here because only the 4Ps [Pantawid Pamilyang Pilipino Program] beneficiaries are required to clean. Also, the other people here are lazy.) With the said problem at hand, it is imperative that the rationale behind the environmental laws and their goals must be communicated to the target audience to encourage engagement and support from them.

In consonance with the findings of this study, the research of Maglucot (2021), entitled "Awareness, Enforcement and Violation of Environmental Crimes among the College Students of Cebu City" also discovered that the lack of awareness of students on environmental laws is a trouble that engenders negative practices towards the environment. In 2011, according to Bonoan-David, "the lack of awareness among Filipinos, especially the youth, of the existing critical environmental laws, have helped deter our environmental growth responsiveness." Until now, with the results of other studies conducted, the problem is still present—the lack of wide information dissemination as a vital enforcement mechanism of environmental laws propels such.

The fourth challenge that the respondents mostly encountered was having no strict consequences or punishments for violators of environmental ordinances. It suggests that implementers' leniency is evident in the municipality. In fact, some respondents stated:

“Hindi naman pinaparusahan kapag ‘di sinunod yang mga batas na ‘yan [batas sa kapaligiran].”

“Pinapabayaan lang ng mga opisyal yung mga pasaway.” (It is not punished when those laws [environmental laws] are not followed. The officials just ignore those stubborn.)

“Yung mga penalties, ‘di rin lang nasusunod mga ‘yon. Walang kwenta.” (The penalties, those are not followed either. Worthless.)

“Hindi naman nanghuhuli ng violators yung mga kagawad at kapitan. Wala silang pakialam.” (The barangay councilors and punong barangays are not apprehending the violators. They do not care.)

Likewise, in the study of Maglucot previously mentioned, leniency or failure of the government to enforce the law strictly was found to be the college students' primary perceived reasons for violating various environmental laws in the Philippines. With the said problem, it can be presumed that the followers are becoming more likely to violate environmental laws since they know that their negative actions will not be reprimanded nor punished by the enforcers. According to Justice Oswaldo D. Agcaoili, as cited by Maglucot (2021), the Philippines has numerous laws outlining and prosecuting environmental crimes; however, their slack enforcement and the implementers' refusal to prosecute offenders has made it difficult to bring environmental violators to justice.

Furthermore, more than half of the respondents of the study believed that the unsustainable implementation of the various environmental conservation

Ordinances is also a problem. In this study, it was found out that the regulating nonbiodegradable plastic and styrofoam ordinance in all six barangays are “not implemented.” This can be attributed to the fact that the municipality failed to sustain its implementation until the present time. Some respondents commented that the said ordinance was only strictly implemented during the first 2-3 years since its enactment. One respondent/informant revealed, “Ngayon, wala nang penalty kapag gumamit ka ng plastics, ‘di gaya dati nung mga 2019-2020 na ang higpit nila. Di na nila napanatili yung pagpapatupad nung ordinansa. Kahit sa’n ka pumunta ngayon dito sa Mangaldan, madalas may makikita kang mga plastics lalo sa mga palengke tapos tindahan.” (Now, there is no penalty when you use plastics, they are not as strict as before around 2019-2020. They have not

maintained the implementation of the ordinance. No matter where you go now here in Mangaldan, you will often see plastics, especially in markets and stores.)

In addition, exactly 50% of the respondents perceived that the environmental conservation ordinances' implementers are uncoordinated and not doing their work. "Yung mga nagpapatupad ng mga batas sa paligid, parang 'di nila alam ang ginagawa nila. Hindi sila nagsisita ng violators tapos yung iba tamad," one respondent/informant mentioned (Those who enforce the environmental laws, it's like they don't know what they're doing. They don't confront violators, and the others are lazy.) The problem may also imply that the implementers may not have clearly defined responsibilities, thus making them ineffective in implementing the ordinances. According to Brown and Crawford (2012), as cited by Fayiah, Otesile, and Mattia (2018), poor coordination of environmental laws' implementers is caused by overlaying authority between the government, other departments, and agencies. As a result, implementers' mandates and priorities are in conflict. Meanwhile, people's misunderstanding of the environmental ordinances provision and insufficient resources (financial resources, human resources, infrastructure facilities) to implement the environmental ordinances both accumulated 39% and were ranked 7.5 problems. In chapter 2 of this study, such problems were also exposed by various researchers. Insufficient resources and misunderstanding of policies are among the problems in the implementation of environmental laws in Vietnam, as discovered in the research study of Trinh, Hu, and Pham Phu (2021) entitled "Situation, Challenges, and Solutions of Policy Implementation on Municipal Waste Management in Vietnam toward Sustainability."

The least perceived problem of the respondents is the lack of support from the national government, civil society, and the private sector. It implies that there have been support and advocates—but needs more enhancement—who are encouraged to act on environmental management and protection in the municipality. Indeed, the government, civil society, and private sector are needed to strengthen the implementation of environmental laws toward attaining a clean and green environment.

## CONCLUSIONS AND RECOMMENDATIONS

Based on the above findings of the study, the researchers come up with the following conclusions.

1. Most respondents were female, ages 21-30, high school graduates, married, and with a monthly family income ranging from P11,000-P15,000.
2. The level of implementation of the various environmental conservation ordinances in the six barangays calls for a more effective and stricter enforcement mechanism, as only the Water Resource Management is concluded to be "implemented;" the Air Quality Management is "moderately implemented, whereas the Land Resource and Solid Waste Management are "slightly implemented." Meanwhile, the Regulating Non-biodegradable Plastic and Styrofoam is "not implemented."
3. The environmental conservation ordinances in the municipality are not effective enough because of the following problems:
  - 3.1 The constituents are undisciplined and disobedient towards the environmental ordinances. They are also non-participative in environmental conservation activities.

- 3.2 Information drives about the environment in the municipality are lacking.
- 3.3 The violators of the environmental ordinances are not always penalized by the enforcers; these enforcers are uncoordinated and tend to neglect their responsibilities.
- 3.4 The implementation of environmental conservation ordinances is unsustainable, implying that the municipality is lacking in regularly assessing the implementation of the various environmental conservation ordinances, thus overlooking the need for improvements or revitalization towards sustainability.
- 3.5 The constituents cannot understand or tend to misunderstand the environmental conservation ordinances and their salient provisions.
- 3.6. Enough resources and the support of the national government, civil society, and the private sector—for the municipality to conserve its environment—do not fully or strongly exist.

Based on the findings mentioned above, the following recommendations are hereby presented:

1. The LGU Mangaldan, should encourage the municipality's constituents, especially those in the six barangays, to act as environmental ambassadors in their community, wherein they are inspired to participate in various activities such as clean-up drives and other environmental causes that will advocate for a clean and green environment.
2. The LGU Mangaldan should conduct an environment forum or symposium involving the Mangaldan's constituents to highlight the various environmental conservation ordinances, explaining their rationale, their main provisions, and the consequences of violating them—such actions can contribute to the ordinances' effective enforcement.
3. To effectively implement the environmental conservation ordinances in the municipality, the LGU Mangaldan, especially the Task Force Kalikasan should:
  - 3.1. Adopt a scheme of incentives for a clean- and-green competition that would propel the barangay constituents to excel at environmental conservation. In addition, the enforcers should be more assertive and vigorous in strictly enforcing the salient provisions of the environmental conservation ordinances to make the constituents disciplined and obedient to such ordinances.
  - 3.2. Make more dynamic environmental education or information drives in the municipality by translating all environmental information into flyers, posters, and pamphlets and dispersing them at the barangay levels.
  - 3.3. Create an assessment group that would assess enforcers' performance in implementing environmental conservation ordinances. In addition, the clear-cut responsibilities of these implementers must be outlined by the LGU for them to achieve coordination, make rational decisions, and appropriate actions for the functionality and high-level implementation of the environmental conservation ordinances.
  - 3.4. Assess the various environmental conservation ordinances by using the Organisation for Economic Co-operation and Development's Development Assistance Committee (OEC-DAC) Evaluation Criteria: Effectiveness, Efficiency, Sustainability, Relevance, and Impact for more scrutiny and knowledge on the status of such ordinances—to know if there is a need for improvements or revitalization and to achieve sustainability.

- 3.5. Circulate the environmental conservation ordinances of the municipality in all barangays and make sure that all its provisions are understandable by the constituents. It could be done by translating the ordinances into Filipino, Pangasinan, or any other language and dialect that most constituents can comprehend.
- 3.6. Strengthen the partnership with municipal and barangay officials, residents, national and provincial government, CSOs, private sectors, and other stakeholders to conserve the environment and realize the environmental ordinances' goals.
4. Further research should be conducted as another phase. It should focus on the perceptions of the enforcement arm of the environmental conservation ordinances in the municipality.

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