

Enhancing the Implementation of Ecological Solid Waste Management (R.A 9003) through Community and LGU Partnership: The Case of Canaman, Camarines Sur

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Abstract

This study examined the implementation, effectiveness, and stakeholder perceptions of the Ecological Solid Waste Management (R.A 9003) in the municipality of Canaman, Camarines Sur, with the aim of identifying challenges and opportunities for improving local waste management. Using a descriptive research design, data were collected through structured surveys from key stakeholders, including barangay officials, community households, and local government unit (LGU) implementers. The study assessed demographic characteristics, program implementation status, effectiveness of services, stakeholder challenges, and expressed needs. Findings revealed that while solid waste collection and segregation were fully implemented, other components such as planning, procurement of tools and equipment, training, and monitoring were only partially executed. Key challenges identified included inadequate technical knowledge, limited resources, insufficient funding, and weak commitment from both LGU and households. Stakeholders emphasized the need for capacity-building, provision of resources and equipment, stronger community–LGU partnerships, and systematic monitoring to enhance program effectiveness. Based on these results, the study recommends targeted training, investment in functional materials recovery facilities (MRFs) and collection infrastructure, advocacy to strengthen community participation, institutionalized monitoring and evaluation, and integration of SWM as a core municipal priority. These interventions aim to bridge the gap between policy and practice, fostering sustainable and community-driven solid waste management in Canaman.

Keywords: Ecological Solid Waste Management, RA 9003, Community-LGU Partnership

1. INTRODUCTION

A. Background

The Republic Act 9003 (RA 9003), also known as the “Ecological Solid Waste Management Act of 2000,” provides the legal framework for a comprehensive and ecological solid waste management program in the Philippines. The law mandates systematic waste handling that ensures public health and

environmental protection; maximizes resource conservation and recovery; and establishes waste-avoidance and volume-reduction measures — including source reduction, composting, recycling, reuse, and resource recovery (e.g., green charcoal production) — prior to collection, treatment, and disposal in environmentally sound facilities (Gamaralalage, Canete, & Nagaishi, 2014). In addition, RA 9003 encourages research and the development of improved waste-management methods and promotes public participation and private-sector engagement in waste management (Yazawa, Tablada, & Baring, 2025).

Despite these comprehensive provisions, actual solid waste management (SWM) at the local level often falls short of the law's standards. For instance, Andaya et al. (2025) reported that many barangay-level Materials Recovery Facilities (MRFs) remain inactive or poorly maintained, waste segregation and recycling practices are inconsistent, and community participation is limited — highlighting the difficulty of enforcing RA 9003 in rural areas. Similarly, Go and Caelian (2020) found that, even in highly urbanized settings, gaps in policy enforcement, public information dissemination, and sustained local authority commitment hinder effective implementation of solid waste programs. Evidence from urban contexts also shows that strong local governance and political will can improve outcomes. In Cebu City, Gamaralalage et al. (2014) documented a municipal waste reduction of over 30% within three years, attributing success to effective local strategies, stakeholder partnerships, capacity building, and systematic monitoring and evaluation. However, such successes remain exceptional, particularly outside major cities (Reyes & Furto, 2013). In the case of Canaman municipality in Camarines Sur, with a population of approximately 36,205 across 24 barangays, existing local documents (Comprehensive Development Plan and Local Development Investment Plan 2017–2019) indicate persistent challenges in solid waste management. Although Canaman has established a Solid Waste Management Council and an MRF, these bodies reportedly lack the capacity and resources to manage waste effectively, leaving residents and surrounding communities vulnerable to environmental and health hazards. These deficiencies mirror systemic issues documented in the literature, including inadequate infrastructure, insufficient public participation, and weak enforcement of RA 9003 at the barangay and municipal levels (Andaya et al., 2025; Go & Caelian, 2020; Yazawa et al., 2025).

Thus, while RA 9003 provides a strong ecological and institutional foundation for sound SWM in the Philippines, the gap between policy and practice underscores the need for empirical, context-specific studies — particularly in smaller municipalities like Canaman — to examine barriers to effective implementation and identify strategies for strengthening community-based waste management systems.

B. Objectives

The study aims to examine the implementation, effectiveness, and stakeholder perceptions of the Solid Waste Management (SWM) program in Canaman, Camarines Sur, to identify challenges and opportunities for improving local waste management interventions. Specifically, the study seeks to:

1. Describe the characteristics of different stakeholders, namely:
 - a. Barangay officials
 - b. Community households

- c. LGU implementers
2. Determine the scope and extent of the SWM program as perceived by the above stakeholders.
3. Assess the effectiveness and efficiency of the delivery of basic services by the LGU in Canaman, Camarines Sur, as perceived by the above stakeholders.
4. Identify the needs, challenges, and problems experienced or perceived by the above stakeholders.
5. Propose development interventions or recommendations derived from the findings of the case study.

C. Significance of the Study

This study is significant as it provides a comprehensive assessment of the implementation, effectiveness, and stakeholder perceptions of the Solid Waste Management (SWM) program in Canaman, Camarines Sur. By examining the perspectives of barangay officials, community households, and LGU implementers, the study identifies challenges, gaps, and opportunities for improving waste management services. The results are expected to have several important implications for different stakeholders:

- **Local Government Unit of Canaman and Other LGUs.** The study offers LGUs empirical evidence on the effectiveness and efficiency of their current SWM programs. By identifying specific gaps in service delivery, resource allocation, and program implementation, LGU officials can make informed decisions to strengthen waste management operations. This includes improving the functionality of Materials Recovery Facilities (MRFs), ensuring regular and systematic collection of waste, and enhancing enforcement of RA 9003. Ultimately, the findings can guide LGUs in planning targeted interventions that optimize municipal resources, increase operational efficiency, and promote compliance with national environmental policies.
- **Community Stakeholders of Canaman, Camarines Sur.** For barangay officials and community households, the study highlights the role of community participation and awareness in the success of solid waste management programs. By documenting the challenges and needs as perceived by households, the study encourages active involvement in initiatives such as waste segregation, recycling, and composting. Furthermore, understanding community perceptions can foster stronger collaboration between residents and local authorities, resulting in more sustainable and community-driven SWM practices.
- **Policymakers and Researchers.** This study contributes to the body of knowledge on solid waste management in small municipalities in the Philippines. It provides policymakers with insights into the practical barriers and facilitators of program implementation at the local level, offering lessons that can inform future legislation or policy adjustments. For researchers, the study identifies critical gaps in current literature regarding stakeholder engagement, program effectiveness, and municipal-level waste management practices, paving the way for further empirical studies or comparative analyses.
- **Environmental and Public Health Advocates.** Solid waste management has direct implications for environmental sustainability and public health. By linking program effectiveness to environmental

and health outcomes, the study provides evidence on how inadequate SWM contributes to pollution, disease transmission, and other environmental hazards. Advocates and NGOs can use the findings to design community-based interventions, awareness campaigns, and advocacy initiatives that promote cleaner, healthier, and safer environments.

II. RELATED STUDIES

Solid waste management (SWM) in the Philippines continues to be shaped by the mandates of Republic Act (RA) 9003, the Ecological Solid Waste Management Act of 2000, yet numerous studies demonstrate that compliance remains uneven across local government units (LGUs). Research conducted at various municipal and barangay levels provides critical insights into the factors that influence SWM effectiveness, the performance of implementing bodies, and the roles of community stakeholders.

A landmark study conducted by Gamaralalage, Cañete, and Nagaishi (2014) examined the implementation of RA 9003 in Cebu City, one of the largest metropolitan areas in the Philippines. Their research revealed that while Cebu City had developed institutional frameworks and policies aligned with RA 9003, significant implementation gaps persisted. Challenges included inconsistent enforcement of segregation policies, limited public cooperation, and inadequate logistical resources. The authors emphasized that sufficient funding, inter-agency coordination, and strengthened community involvement are essential to achieving long-term improvements. These findings highlight that even well-resourced LGUs struggle when institutional systems do not fully support operational execution.

In a more recent investigation, Yazawa et al. (2025) explored barangay-level SWM practices in Barbaza, Antique. Their findings demonstrated that while barangay leaders and residents generally recognized the importance of proper waste management, structural barriers—such as irregular garbage collection schedules, lack of MRF functionality, and insufficient barangay funds—undermined compliance. The study underscores a common pattern where barangays possess the will to implement RA 9003 but lack the necessary capacity. Moreover, the authors noted that public awareness campaigns and grassroots participation are key to strengthening local-level waste management efforts, suggesting that behavioral and institutional factors must be addressed simultaneously.

A related assessment by Andaya, Antonio, Espina, and colleagues (2025) documented the implementation of RA 9003 in Barangay Gen. T. de Leon, Valenzuela City. Their results revealed that although the barangay had established waste management ordinances, the actual practice of segregation and recycling remained inconsistent. The study attributed the gap to limited technical expertise among LGU implementers, insufficient equipment, and weak monitoring systems. Additionally, the lack of sustained community engagement activities contributed to low compliance among households. Their findings align with previous research showing that the success of SWM programs is largely dependent on the interplay between LGU capability, public participation, and the presence of functional waste management facilities.

Collectively, these studies reveal consistent challenges across various Philippine localities: insufficient institutional capacity, weak enforcement of SWM regulations, limited public participation, and resource

constraints that hinder effective implementation. They also demonstrate that both urban and rural municipalities face similar systemic barriers, regardless of population size or income classification. This body of work provides a strong foundation for examining SWM implementation in Canaman, Camarines Sur. By situating the present study within established national patterns, this research seeks to determine how local stakeholders perceive program effectiveness, identify persistent gaps, and recommend targeted interventions that can help strengthen environmental governance and compliance with RA 9003.

III. METHODOLOGY

A. Research Design

This study utilized a descriptive research design to examine the implementation of the Solid Waste Management (SWM) Program in the Municipality of Canaman, Camarines Sur. The design was appropriate for describing existing conditions and documenting the perceptions of key stakeholder groups, namely barangay officials, community households, and LGU implementers. Through this approach, the study assessed the scope and extent of SWM implementation, the perceived effectiveness and efficiency of LGU service delivery, and the needs, challenges, and problems encountered by stakeholders. The variables were evaluated using structured Likert-type scales, allowing the systematic quantification of responses.

B. Research Methods

A quantitative survey method was employed to collect standardized, measurable data from the identified stakeholder groups. A researcher-developed questionnaire served as the primary data-gathering tool. It contained sections on demographic information, implementation indicators of the SWM program, perceived effectiveness of LGU services, and identified problems and needs related to waste management. The instrument underwent expert validation for clarity and relevance, followed by pilot testing to ensure reliability prior to full data collection.

C. Data Collection Method

Data were gathered through the personal administration of structured survey questionnaires across the 24 barangays of Canaman. Coordination with barangay officials facilitated the distribution and retrieval of the questionnaires, while on-site administration ensured complete and accurate responses. Respondents accomplished the instrument voluntarily and were informed of the study's purpose, confidentiality measures, and ethical considerations. The use of a Likert-type scale enabled the assessment of stakeholder perceptions on the extent of program implementation, level of effectiveness, and seriousness of identified concerns.

D. Population and Sampling Procedures

The study targeted three major stakeholder groups involved in or affected by the SWM Program: barangay officials, community household representatives, and LGU implementers. A combination of

purposive and random sampling techniques was applied. Barangay officials and household representatives were selected from each of the 24 barangays to ensure broad representation of community perspectives. LGU implementers directly responsible for SWM operations were purposively included due to their administrative roles and technical familiarity with the program. This sampling approach ensured that perspectives from both community-level actors and municipal implementers were adequately captured.

E. Statistical Treatment of Data

The responses gathered from the survey were encoded, organized, and analyzed using descriptive statistical techniques, specifically frequency counts, percentages, and weighted means. These tools were used to summarize respondent characteristics, determine the extent of SWM program implementation, and analyze stakeholder perceptions of effectiveness, challenges, and needs. Weighted means were interpreted according to predetermined verbal descriptions aligned with the Likert-scale values used in the questionnaire. All computations and tabulations were carried out using Microsoft Excel, ensuring accurate and systematic processing of the data.

IV. RESULTS AND DISCUSSION

A. Demographic Characteristics of the Respondents by Type

The study intends to describe the characteristics of the various stakeholders involved in the implementation of the Solid Waste Management Program in Canaman. These stakeholders include Barangay Officials, community households, LDS, and LGU Implementers. Table 1 shows the demographic characteristics of the stakeholders. As shown in the Table, there were two major types of respondents reported during the survey. As to their age groups, the youngest respondents among barangay officials were 22 years old, the middle age group was 47 years and the oldest among them was 65 years old. Community households' youngest respondent was 24 years old, while those in the middle were 43, and the oldest community household was 62 years old during the survey. From the foregoing results, the results imply that a greater proportion of the respondents were mature and old enough to tackle various programs in their community, particularly on solid waste management activities. Furthermore, the age classes will indicate their capability to be capacitated with skills that will enhance their responsibilities especially among the responding barangay officials.

Sex distribution shows that male respondents were outnumbered by a little bit by females with three respondents but this cannot substantially be attributed to statistical differences, the same as those number of female and male barangay officials and community households. This result indicates that the herein respondents are more or less equally distributed among the sexes. Notably, there were no respondents who came from LGBTQ and this may not affect the objective of this study since sex was not hypothesized to have a significant difference. The figures indicate that the herein respondents equally form part of the needed information by the researcher.

On educational attainment as an attribute to the study, results showed that both stakeholders had various levels of educational attainment which ranged from elementary to college graduates and vocational courses. It could be noted, however, that more households had attained lower levels of educational attainment than those who were in the group of barangay officials. The result indicates that the respondents were capable of comprehending the various information required of them in the study and thus a very reliable source of information about the nature of the program. Moreover, their level of educational attainment could be a prelude to various capability enhancement since higher levels were college level. Thus, relevant for consideration in the policy recommendations.

On the experiences related to SWMP implementation, the data indicate that the range of years of experience or exposure of the respondents to the program in their locality varies from one month the lowest to 10 years with an average of 5.5 years. Community households were noted to have higher length of experiences in solid waste management with 1 year against barangay officials who had 0.12 years or one month of experience on the same during the survey. The data, however, indicate that the herein respondents were highly knowledgeable in their work, especially those in the local barangay officials.

Table 1. Demographic Characteristics of the Respondents by Type

DEMOGRAPHIC CHARACTERISTICS OF THE RESPONDENTS	ATTRIBUTES	TYPE OF RESPONDENTS	
		Barangay officials	Community households
AGE GROUP			
	Youngest	22	24
	Middle Age	47	43
	Oldest	65	62
SEX			
	Male (14)	9	5
	Female(17)	7	10
	sub-total	16	15
HIGHEST EDUCATIONAL ATTAINMENT			
	Elementary	1	4
	High School	7	5
	SHG Graduate	0	2
	College Level	5	3
	College Graduate	3	3
	Vocational Course (Specify	0	0
	sub-total	16	17
YEAR OF EXPERIENCE IN THE POSITION			
	Minimum years of experiences	0.12	1
	Average	5.33	5.5
	Longest year of Experiences	10	10

B. Training Attended Related by the LGUS on Solid Waste Management Program

On the aspects of trainings attended by the stakeholders, the researcher obtained few information from the respondents. As shown on Table 2, there were few trainings been conducted among them. To name a

few of the trainings they attended include: (1) Training on RA 9003, the Law on Ecological Solid Waste Management, which accordingly been perceived with moderate degree of satisfaction among the respondents. (2) The second training was on the topic of segregation and collection techniques for solid wastes and the segregation of types of solid wastes in their barangays. The same level of satisfaction been disclosed on its implementation. Majority were moderately satisfied of these trainings attended. Since the stakeholders have no substantial knowledge and experiences due to inadequate trainings attended, then it is highly very important that the same stakeholders must be provided with such adequate trainings on the advancement of knowledge in managing wastes in their locality. This training however maybe futile if not be complimented with the needed facilities and equipment or tools as well as funds for the program operation.

Table 2. Types of Training Attended Related by the LGUs on Solid Waste Management Program

Types of Training Attended					TOTAL	WEIGHTED MEAN	REMARKS
ACTIVITIES	LEVEL OF SATISFACTION						
	Low (1)	Moderate (2)	High (3)	Locality			
Training RA 9003 (Ecological Solid Waste Mgt.)	19	10	4	0	33	1.8	Moderate
Training on Waste Segregation and Collection Techniques	14	10	6	0	37	1.8	Moderate
Collection of Solid Waste	23	0	10	0	33	1.6	Moderate

Legend:

Likert's Scale	Interpretation
2.34-3.0	High
1.67-2.33	Moderate
1.0-1.66	Low

C. Status and Extent of Implementation of Solid Waste Management Program

Solid waste management programs carry with its various components with various activities with desired status and extent which undergo as a process. These activities include: (1) Planning on Solid Waste Management Program; (2) Procurement of Tools and Equipment; (3) Training and Capacity Building; (4) Collection of Solid Waste; and (5) Monitoring and Evaluation. Among these activity components, only collection and segregation had been fully implemented in Canaman, Camarines Sur. The rest were partially implemented. From the foregoing results, the researcher could imply that the Solid Waste Management Program is not yet been priority in the Municipality since most of the foregoing activities were partially implemented according to the respondents.

Table 3. Status and Extent of Implementation of Solid Waste Management Program in Canaman

SCOPE AND EXTENT OF IMPLEMENTATION					TOTAL	WEIGHTED MEAN	REMARKS
ACTIVITIES	STATUS OF IMPLEMENTATION						
	Partial (1)	Full (2)	Accomplished (3)	Locality			
Planning on Solid Waste Management Program	26	3	4	0	33	1.3	Partial
Procurement of Tools and Equipment	19	10	4	0	33	1.5	Partial
Training and Capacity Building	24	7	6	0	37	1.3	Partial
Collection of Solid Waste	23	0	10	0	33	1.6	Full
Monitoring and Evaluation	25	0	8	0	33	1.5	Partial

Legend:

Likert's Scale	Interpretation
2.34-3.0	Accomplished
1.67-2.33	Full
1.0-1.66	Partial

D. Services Rendered by LGU in the Implementation of Solid Waste Management Program

Another objective of the study is to determine the level of effectiveness of various services rendered associated to the Solid Waste Management Program of the Municipality. Table 4 describes the different services rendered as disclosed by the stakeholders. As shown on the table, the following services were rendered and been evaluated by the stakeholders, and found out that (1) Provision of Transport Vehicle for Garbage Collection, and (2) Segregation of Solid Wastes were described Less Effective. It will be noted that during the survey, some of the barangay officials revealed that there was no vehicle intended for garbage collection. Moreover, the community cannot implement the segregation of their waste, making these services poorly perceived by the stakeholders. Among the services rendered which has moderate satisfactory include; (3) Information and Dissemination on Solid Wastes, and (4) Provision of MRF in their locality. So, the foregoing results implies that the municipality is too far from the expected outcome of RA 9003 which is the excellent implementation of Solid Waste Management Program in their respective localities.

Table 4. Types of Services Rendered by LGU in the Implementation of Solid Waste Management Program

SERVICES RENDERED	LEVEL OF EFFECTIVENESS				TOTAL	WEIGHTED MEAN	REMARKS
	High (3)	Moderate (2)	Low (1)	Locality			
Provision of Transport Vehicle for Garbage	0	0	1	0	1	1.0	Less Effective
Segregation of Solid Wastes	5	10	18	0	51	1.5	Less Effective
Information and Dissemination on Solid Wastes	9	17	8	0	50	1.9	Moderate
Provision of MRF in their locality	12	15	8	0	33	2.2	Moderate

Legend:

Likert's Scale	Interpretation
2.34-3.0	High
1.67-2.33	Moderate
1.0-1.66	Less Effective

E. Problems and Challenges Encountered by the Stakeholders in Solid Waste Management

As to the fourth objective which is to identify the needs, challenges and problems perceived by the stakeholders, the researcher sought the perceptions and experiences of the stakeholders related to the implementation of Solid Waste Management Program in the Municipality. There were four (4) major problems that were disclosed by the stakeholders namely: (1) Inadequate Technical knowledge, skills, and attitude on Solid Waste Management which gained a weighted mean of 3.0 indicating very serious problems and challenges on the Likert's scale. The rest of the problems and challenges were rated moderately serious. With means such as Inadequate Resources, Supplies, for Implementing Various SWM Act (2.2), Unsupportive LGU Officials (1.9), and Inadequate Funds to Support SWM (1.9). From the foregoing results and analysis of findings, the researcher implies that the stakeholders must be capacitated with Knowledge, Skills, and Attitude since these are serious problems. On the other hand, other problems and challenges may be addressed secondarily.

Table 5. Problems and Challenges Encountered by the Stakeholders in Solid Waste Management in Canaman.

PROBLEMS AND CHALLENGES ENCOUNTERED	DEGREE OF SERIOUSNESS			TOTAL	WEIGHTED MEAN	REMARKS
	Very serious (3)	Moderately serious (2)	Less Serious(1)			
Inadequate Technical KSA on SWMP	1	0	0	1	3.0	Very Serious
Inadequate Resources, Supplies, for Implementing Various SWM Act	20	6	8	33	2.2	Moderate
Unsupportive LGU Officials	15	9	9	33	1.9	Moderate
Inadequate Funds to Support SWM	16	8	9	33	1.9	Moderate

Legend:

Likert's Scale	Interpretation
2.34-3.0	Very Serious
1.67-2.33	Moderately Serious
1.0-1.66	Less Serious

F. Needs of Various Stakeholders for Effective Implementation

The main highlight of the study is to determine the needs of the various stakeholders which will be formulated as policy recommendations of the study. As disclosed by the stakeholders, the following needs are very highly necessary and need to be addressed to achieve efficient and effective Solid Waste Management program to wit: (1) Improved the KSA on SWMP, it will be noted that stakeholders are lowly educated with inadequate trainings, lack of skills, as well as basic services, so therefore, the need to capacitate the stakeholders is highly needed. (2) Enough Resources, Tools, and Equipment. Associated to the knowledge and skills of the respondents, the resources such as resources, tools, and equipment must also be provided. These needs adhere to the principles that knowledge and skills without the needed resources, tools, and equipment would be futile and less effective. (3) Commitment of the Household Communities. The solid waste management was crafted as a two-way responsibility in partnership with local officials as well the community stakeholders.

Without the commitment of each component, it would be downfall to the goal of the program. (4) Support of LGU and Community Leaders must forge with great commitment to the duties and responsibilities of each other. (5) Personal Support, Commitment of the Project Beneficiaries. In addition to the highly necessities of the stakeholders, other needs such personal support and commitment of the project beneficiaries shall also be addressed. This will form part of motivational factors so that individuals in the community will actively participate in the various community solid waste management undertakings.

Table 6. Needs of Various Stakeholders for Effective Implementation of SWM in Canaman.

NEEDS OF THE STAKEHOLDERS	DEGREE OF NECESSITY			TOTAL	WEIGHTED MEAN	REMARKS
	Very High (3)	Moderate (2)	Less Necessity(1)			
Improve the KSA on SWMP	22	8	3	33	2.6	Very High
Enough Resources, Tools, and Equipment	33	0	0	33	3.0	Very High
Commitment of the Household Communities	26	4	3	33	2.7	Very High
Support of LGU and Community Leaders	22	10	1	33	3.0	Very High
Personal Support, Commitment of the Project Beneficiaries	18	9	7	34	2.3	Moderate

Legend:

Likert's Scale	Interpretation
2.34-3.0	Very High
1.67-2.33	Moderate Necessity
1.0-1.66	Less Necessity

IV. CONCLUSION AND RECOMMENDATION

A. Conclusion

The study highlights that while the Municipality of Canaman, Camarines Sur, has established foundational structures for solid waste management, the implementation of the SWM program remains partial and faces significant challenges. Only collection and segregation activities are fully operational, while other components such as planning, training, procurement, and monitoring are insufficiently implemented. Services provided by the LGU, particularly transport for garbage collection and support for waste segregation, were perceived as less effective due to limited resources, inadequate facilities, and weak enforcement of RA 9003. Stakeholder analysis revealed gaps in technical knowledge, skills, and experience among both barangay officials and community households, compounded by limited training and insufficient resources. The study also underscored the importance of active community participation, committed LGU leadership, and coordinated efforts between households, local officials, and implementers to achieve effective SWM. Overall, the findings demonstrate that enhancing SWM in Canaman requires a partnership-driven approach, combining capacity-building, resource provision, and sustained collaboration between the community and LGU. Addressing these gaps will strengthen program implementation, improve environmental and public health outcomes, and ensure compliance with national solid waste management policies, thereby fostering a more sustainable and community-centered waste management system.

B. Recommendation

1. Conduct training and capacity-building for stakeholders. Regular training on waste segregation, composting, recycling, and RA 9003 mandates is recommended to improve knowledge, skills, and attitudes of barangay officials, LGU implementers, and households. Camarillo and Bellotindos (2021) found that compliance with SWM practices improves when stakeholders are well-informed and capable.

2. Provide and maintain adequate resources, tools, and facilities. Functional MRFs, collection vehicles, PPE, and other equipment are critical. Andaya and Cruz (2025) highlight that many MRFs in the Philippines remain non-functional due to insufficient resources and weak enforcement, stressing the need for proper infrastructure and maintenance.

3. Promote strong community–LGU partnership. Active collaboration between households and local authorities ensures sustainable SWM. Tinio, Rollon, and Moya (2019) demonstrated that combining functional facilities with public participation significantly reduces waste volume, emphasizing shared responsibility.

4. Systematic monitoring and evaluation mechanisms should be established to assess the progress, efficiency, and effectiveness of solid waste management activities. This includes regular reporting, audits of MRF functionality, tracking of collection schedules, and feedback systems from community members. By identifying gaps and challenges early, the LGU can adjust strategies, allocate resources more effectively, and ensure that program objectives are being met. Monitoring and evaluation also provide data-driven evidence to guide future policy and program improvements.

5. To institutionalize the SWM program, it should be integrated into barangay and municipal development plans with dedicated staff responsible for its implementation. By making SWM a key priority, the LGU ensures sustained attention, funding, and accountability. Prioritization also signals to the community that environmental protection and public health are critical municipal concerns, motivating households to actively engage in responsible waste management practices.

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