

# EXAMINATION OF THE PROBLEMS ENCOUNTERED IN SOLID WASTE MANAGEMENT: BASIS FOR PROPOSED IMPROVEMENT MEASURES

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## Abstract

This study identified the problems encountered during the implementation of the solid waste management program in Maddela, Quirino in the Philippines. From a survey of 483 respondents who are household and ESWM implementers, the study reveals that the issues that impede implementation are related to the LGU's use of its budget or money, staff capability, and equipment adequacy to execute the ESWM Components and Sub-components. Furthermore, the obstacles could be overcome by paying attention to the proposed most important measures, which included policy enforcement or strict implementation, the provision of ESWM facilities, the organization of barangay based ESWM implementing structures, and the involvement of the private sector in recycling and materials recovery. By enhancing its organizational structure, capacitating its implementing unit, and providing enough financial assistance to its implementing agencies, the LGU can maintain or increase the scope of its implementation. That the proposed steps will improve/intensify the extent of ESWM implementation in the Maddela municipality.

**Keywords:** Problems encountered, Solid Waste, Solid Waste Management Program, Proposed Measures

## 1. INTRODUCTION

As the Philippines' population and local economies develop, the problem of solid waste management confronting local government units (LGUs) becomes more complex. To effectively deal with them, LGUs must examine and sketch out short- and long-term solutions on a regular basis. Solid waste disposal is proving to be a complex and contentious subject, and local governments have few alternatives for dealing with it because the legislation already spells out what they must do. Their most difficult task is to devise solid waste management and pollution control techniques that will limit the amount of garbage released into the environment. (Service Delivery Impact: Resource Book for Local Government; Solid Waste Management Mapping Out Options and Solutions at the Local Level)

R.A. 9003, also known as the Solid Waste Management Act of 2001, established the essential structure and institutional procedures for proper waste treatment and disposal. The law establishes acceptable criteria for waste minimization and the implementation of appropriate treatment measures (e.g., segregation, transportation, collection, disposal, and recycling procedures), which are bolstered by the promotion of national research and development initiatives. The law mandates the creation of a Local Government Solid Waste Management Plan, which is strategically and geographically enforced in local government units (LGUs) for the implementation of safe and sanitary solid waste management plans in their respective areas, in addition to the establishment of the National Solid Waste Management Commission.

With the aid of the ECO-GOVERNANCE NGO, the LGU of Maddela began implementing RA 9003 in 2004 and created a 10-year ESWM Plan covering the planning period 2005 to 2015. The idea was presented to the National Solid Waste Commission (NSWMC); however the body did not give it its complete approval. However, in order to comply with RA 9003, the LGU implemented other provisions of the plan, such as a Waste Analysis and Characterization Study (WACS), the closure of open dumpsites, the establishment of a Sanitary Landfill, the construction of a Material Recovery Facility, waste segregation, and waste collection at the LGU's first collection area, the urban centre.

Why do waste management issues continue to increase and persist? Are there any mandates that go unnoticed or aren't followed in the local units? What are the concerns and problems that plague waste management implementation? Is the LGU following RA 9003's requirement and diverting garbage from its final disposal? Or is the local government on the correct track in terms of implementation? The researcher's mind was disturbed by the preceding questions; therefore he decided to do a study on the degree of ESWM implementation in the municipality of Maddela, Province of Quirino.

This study examined the municipality of Maddela in the Province of Quirino's Ecological Solid Waste Management Plan (ESWMP) and offered an assessment of its execution in compliance with R.A. 9003. The study examined the implementation of solid waste management program components, identifying implementation gaps, and describing ways to improve implementation in order to achieve long-term sustainability. While the ESWM system is designed to create a sustainable waste management system through its features and procedures, there is a compelling need to assess the scope of the implementation area, as well as the entire municipality. The scope of implementation was examined at this point in order to identify gaps and possibilities to discuss and provide answers to difficulties and problems that arose throughout the phase or period of implementation, as well as to achieve long-term implementation.

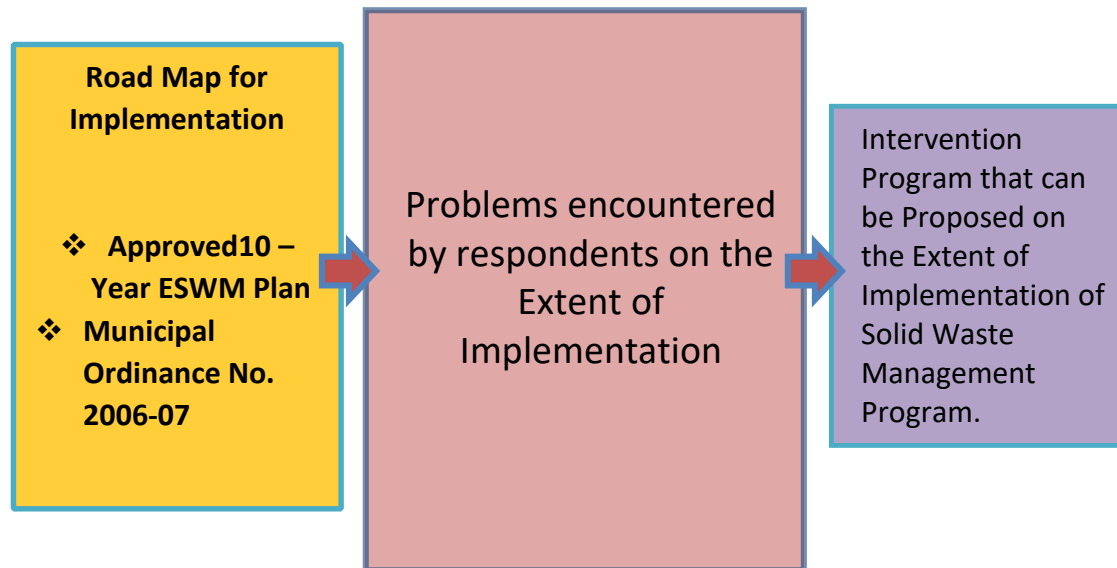
In general, the purpose of this study is to provide insights to implementers, planners, and decision makers at the municipal and barangay levels about the extent of Solid Waste Management implementation, as it demonstrates the role of the government and the community, NGOs, and private sector in the implementation of RA 9003 in the municipality of Maddela from 2016 to 2018.

## **2. CONCEPTUAL FRAMEWORK**

This paper presents the extent of implementation of solid waste management in the municipality of Maddela, Quirino. Emphases will be on the stakeholders, such as the households in the community which are the recipients of programs/projects implementation, and the implementers of ESWM Programs (Barangay Officials, members of Barangay solid Waste Management Committee, The implementing unit of the LGU). Moreover, the priority programs/projects that are to be implemented that are identified or preferred to by the stakeholders which outcome will be the sustainable waste management

The main idea that evolved in the study is expressed in terms of the Established framework of RA 9003 which mandated the LGU to implement through its Ten (10) year ESWM Plan integrated therein the adoption of a major strategy of implementation which will finally ends to a sustainable Solid Waste Management of the LGU. Hence, the extent of implementation of SWM.

The extent of implementation is determined within the confine of the following focused ESWM component: Waste Generation and storage, Waste Processing and Resource recovery, Collection and transportation of waste, Disposal of Waste, Enforcement/penalties. The components were embodied in the Approved 10 – Year ESWM Plan, and Municipal ESWM Ordinance. The extent of implementation is expressed or described through the following variables: 1. Profile of the Respondents; 2. Status of Solid Waste Management Program; 3. Extent of implementation of Solid Waste Management Program; 4. Problems Encountered by Respondents on the Extent of Implementation; 5. Intervention program that can be proposed on the Extent of Implementation of Solid Waste Management Program. The problems encountered during implementation reflects the status and extent of implementation. The priority programs or measures to improve the extent of implementation when carried out will finally ends to sustainable ESWM implementation.



### 3. METHODOLOGY

A descriptive survey research design was used in this study. It was held at the municipality of Maddela, which is located in the province of Quirino's northeastern region. It is around 62 kilometers from Santiago, Isabela, and about 31 kilometers from Quirino, the capital

city. It is located at 16° 21' 35.52" N latitude and 121° 40' 57.18" E longitude on the meridian of 16° 21' 35.52" N latitude and 121° 40' 57.18" E longitude. Meanwhile, the primary respondents in the study's data collection are divided into two categories: households and ESWM implementers. A total of 483 people took part in the survey, providing information that was needed for the study. The respondents for the Households and Implementers survey were picked from 26 of the LGU's 32 barangays. To define the general extent of application, the data or information gathered was examined using the frequency approach. Secondary data was used to describe the current state of implementation, as well as the LGU's current capabilities and potential in implementing SWM initiatives.

#### **4. RESULTS AND DISCUSSION**

With regard to problems encountered in the implementation of ESWM programs, table 1 showed the problems encountered are the most problematic. The following problems were hindrances to a broader expanse of implementation or limit the attainment of sustainable ESWM implementation.

Problem Encountered 1. Conduct of Comprehensive Community-based consultation to guide proper waste segregation practices at the household level is not being done. This problem is where the predicament of the municipal and barangay LGU lies, particularly in institutionalizing a community-based solid waste management program in the barangays. This problem entails intensive community organizing to involve or encourage people's participation, roles of various sectors, such as, Households, NGOs, private and business sectors, and the local government unit. However, this problem interact with the issue of insufficient financial resources of the barangay and municipal unit, as well as leadership quality.

Problem Encountered 2. Lack of financial resources to finance implementation of ESWM Program. This second most problematic problem is one of the most glaring issue in all barangays solid waste management, even at the municipal level. Though the RA 9003 mandates to establish material recovery facilities in all barangays, collect recyclable and bio-degradable waste, the LGU lacks financial resources to comply with the law, and to assist the barangays in the establishment of materials recovery facilities. On the other hand, because of financial constraints, barangay LGUs are unable to hire the necessary personnel, acquire and maintain equipment, manage a collection scheme, and basic SWM facilities or maintain disposal site.

Problem Encountered 3. "No segregation, No collection" policy is not strictly implemented. This third encountered problem was observed in the quality of wastes that were collected and disposed by barangay to the municipal sanitary landfill. The quantity of recyclables that are retrieved or recovered by waste pickers is increasing, in every quarter of recording, by the LGU landfill crew. At this juncture, the barangay households or waste generators would feel that the barangay waste management committee is not enforcing the policy or not conducting material recovery activities in the barangay.

Problem Encountered 4. Uncontrolled used of packaging materials among constituents. The fourth problem is observed during the collection of LGU and barangay collectors at the public market and barangays of which plastic packaging are the most dominant wastes in the daily waste stream, and some of these are recyclables. The vendors of wet and dry goods used uncontrollably plastic bags as secondary packaging of sold goods. In the LGU, the absence of ordinance to regulate excessive use of plastic as packaging is contributory to the problem encountered.

Problem Encountered 5. Lack of trained personnel to manage implementation of ESWM programs. This problem is noticeable in the number, and qualification of LGU personnel involved in the implementation of solid waste management. The LGU has 32 barangays, and has growing commercial and industrial establishment as waste generators and stakeholders of municipal solid waste management (*Brief description of Maddela*) but technical personnel is not sufficient not only in terms of number but also on qualification, as well as, nature of appointment. The LGU need to hire qualified and competent technical staff to handle waste management and in order to effectively and efficiently implement ESWM programs, projects, and Activities.

<b>Table 1. Problems Encountered in the Implementation of ESWM Program by Households and Implementers</b>				
Problem Encountered	Total Frequency (f)	Rank	Weighted Rank	Adjectival Value
1. Conduct comprehensive community-based consultation to guide proper waste segregation practices at the household level is not being done.	471	1	3	Most Problematic
2. Lack of financial resources to finance implementation of ESWM.	470	2	3	Most Problematic
3. Uncontrolled used of packaging materials among constituents.	466	4	3	Most Problematic
4. Lack of trained personnel to manage implementation of ESWM programs.	465	5	3	Most Problematic
5. "No segregation, No collection" policy is not strictly implemented.	468	3	4	Most Problematic

### **Proposed measures to improve the implementation of the ESWM Program in the Municipality of Maddela**

As regards to the proposed measures to improve the implementation of ESWM programs, the following figure show that the proposed measures were ranked the Most Important by both Household and Implementer respondents. Out of the eight (8) proposed measures

the Strict Implementation of “No Segregation, No collection” policy ranked number 1. The Local Ordinance on Solid Waste Management prohibits the collection of unsegregated wastes, as well as, penalize those who permits the collection of non-segregated or unsorted wastes.

The Establishment of MRF in each barangay ranked number 2. Records of the LGU show a situation when establishment of barangay material recovery facilities grew slowly, an issue of lack of barangay funds or assistance. The Establishment of MRF in each barangay has connection or linked with financial matters. However, funding could be sourced out from provincial government, NGAs, financial Institutions through grants or loans.

In terms of Political Will and Leadership, and strengthening links with buyers of recyclable materials, the proposed measures were ranked 3.5. The issue of political will comes in terms of lack of available policies the support enforcement, financing, and linkages of LGU to research and technology related to materials recovery and recycling. These two proposed measures were observable in terms of lack of policies that links recyclers or buyers with recovered recyclable materials are consolidated for recycling. In the case of LGU, not all recyclables that are consolidated in the Central Material Recovery Facility are bought by junk buyers or recyclers; they don't buy a recyclable material that has no commercial value, hence, its disposal of the materials to the sanitary landfill.

As regards to rank 5 proposed measures, the Operation of Sanitary Landfill is crucial to improve the extent of implementation. It is where the wastes are properly managed in order to protect the public health and the environment (goal of RA 9003) from the harm or risk brought about by toxic substances or gases that may be or are mixed with ground water and air. As one of the goals of RA 9003, the awareness of people on the presence and proper operation of sanitary landfill will promote greater public participation, and environmental awareness.

In terms of ranked 6 & 7 proposed measures, the availability of facilities, equipment, and machineries in the operationalizing ESWM programs and projects are needed. To be cost efficient, in a long-term, the LGU need to invest more on equipment, facilities, and machineries coupled with appropriate technology particularly on waste collection, sorting, waste processing and recycling. However, in the absence of sophisticated equipment, facilities and machineries, the best way to roll out a solid wastes management program in LGU and its barangays is to start small and simple, and start a doable practice of segregation in the household and community. Translate complicated and complex procedures into easy and doable activities (Solid Waste Management Made Easy. A Do-It-Yourself Guide to a Community-Based Ecological Solid Waste Management Programme). From the same source, for a “minimal cost and maximum benefit in implementing a community-based ESWM program, all it take is the willingness to do it and the patience and discipline to get it done”.

On the other hand, in order to propel a more extensive implementation of ESWM Programs, the Municipal and the Barangay Solid Waste Management Boards must the



organized and institutionalized. The Municipal ESWM Ordinance spelled out the roles and responsibilities of the Boards and which were embodied and adapted also on the Municipal Ten (10) – Year ESWM Plan 2016 - 2025.

For the municipal SWM Board, the following are the roles and responsibilities, as specified in Section 12 of RA 9003:

- Develop the MWSM Plan that shall ensure the long-term management of solid waste, as well as integrate the various solid waste management plans and strategies of the barangays in its area of jurisdiction. In the development of the solid waste management Plan, it shall conduct consultations with the various sectors of the community.
- Adopt measures to promote and ensure the viability and effective implementation of SWM Programs in its component barangays.
- Monitor the implementation of Municipal SWM Plan through its various political subdivisions and in cooperation with the private sector and the NGOs.
- Adopt specific revenue-generating measures to promote the viability of its SWM Plan.
- Convene regular meetings for purposes of planning and the coordinating the implementation of the solid waste management plans of the respective component barangays.
- Oversee the implementation of the Municipal Solid Waste Management Plan.
- Review every two (2) years or as the need arises the Municipal Solid Waste Management Plan for purposes of ensuring its sustainability, viability, effectiveness and relevance in relation to local and international developments in the field of solid waste management.
- Develop the specific mechanics and guidelines for the implementation of the Municipal Solid Waste Management Plan.
- Recommend to appropriate local government authorities specific measures or proposals for franchise or build-operate-transfer (BOT) agreements with duly recognized institutions, pursuant to RA 6957, to provide either exclusive or non-exclusive authority for collection, transfer, storage, processing, recycling or disposal of municipal solid waste.
- Provide the necessary logistical and operational support to its barangay. The proposal shall take into consideration appropriate government rules and regulations on contracts franchise and build-operate –transfer agreements.
- Recommend measures and safeguards against pollution and for the prevention of the natural ecosystem; and

- Coordinate the efforts of its barangay in the implementation of the municipal Solid Waste Management Plan.
- The barangay SWM Committees have the following roles and mandates:
- Develop the Barangay SWM Program/ Plan consistent with the Municipal 10-Year SWM Plan.
- Adopt measures to promote and ensure the viability and effective implementation of SWM Programs such as waste avoidance and reuse, segregation, recycling, composting and gardening in the different puroks by the HHs, schools, churches and other waste sources.
- Adopt and participate in the Join the Environmental Caravan (JEC) Award to heighten implementation and compliance with Segregation at-source, Recycling, Composting, and Gardening (SRGC).
- Develop specific mechanics and measures in the implementation and monitoring of the Barangay SWM Plan.
- Organize joint monitoring of purok compliance.
- Adopt specific revenue-generating measures to promote the viability of its SWM Plan.
- Convene regular meetings for purposes of planning, coordinating the implementation of the Barangay SWM Plan and providing feedbacks of compliance through the SWM TWGs of puroks and SWM Coordinator.
- As needed provide the necessary logistical and operational support to its puroks and schools.
- Recommend measures and safeguards against pollution and for the prevention of the natural ecosystem.
- Coordinate the efforts of the different puroks in the implementation of Barangay Solid Waste Management Plan, package and document good practices and compliance of the different puroks.
- Impose fees on SWM services provided for by the LGU and/or and authorized organization or unit.

The committee shall designate a barangay SWM Coordinator and create a TWG with 3-4 representatives each from the different puroks, schools, churches, hospital and other major waste sources in the barangay. The TWG in their respective puroks and jurisdictions to enforce segregation, composting, recycling and pocket gardening. They shall also maintain proper recording and reporting of SRGC complaints and compliances to the Barangay SWM Coordinator.



**Table 2. Weighted Rank, total Frequency and Adjectival Value of Proposed Measures to Improve the Extent Implementation of ESWM Programs**

Proposed Measure	Total Frequency	Frequency ranking	Weighted Rank	Adjectival Value
1. Establishment of MRF in each Barangay.	474	2	4	Most Important
2. Strict implementation of "No segregation, No collection" policy.	480	1	4	
3. Strengthen links with buyers of recyclable materials.	472	3.5	4	
4. Establishment and operation of Sanitary Landfill.	469	5	4	
5. Increase cost efficiency in the implementation of ESWM.	466	6	5	
6. Establishing sorting and treatment facilities.	463	7	5	
7. Need to organize Secretariat/TWG for the SWM Board.	462	8	5	
8. Political will and Leadership.	472	3.5	4	

**Table 3. Proposed ESWM Program to Enhance the Extent Implementation for the next Three Years.**

Goals/Purpose/Objectives	P/P/A Activities	Expected Output	Target output by year		
			Year 1	Year 2	Year 3
1. Increased EWSM facilities by establishing MRF in each Barangay within three years.	Provision of ESWM Facilities in each Barangay of Maddela, Quirino	Established MRF in 32 barangays.	15 Barangays	10 Barangays	5 Barangays
2. To organize community-based Waste Management Program Implementation in all barangays within 3 years.	Organizing 32 barangays to conform to CB ESWM Program Planning and implementation	32 barangays organized/capacitated 32 barangays Monitored	20 Barangays	10 Barangays	2 Barangays
3. Annual Monitoring and Evaluation of ESWM Programs and compliances	Conduct Annual Monitoring and Evaluation	Two (2) M & E in each year for 32 brgys	Two (2) M & E in 32 Barangays	Two (2) M & E in 32 Barangays	Two (2) M & E in 32 Barangays
4. To provide Annual Incentives and Awards to ESWM compliant households,	Incentives and Awards	Conducted Annual Incentives and Award every town fiesta	1 (one) I&A	1 (one) I&A	1 (one) I&A

Barangays and Institutions.					
5. To organize/Functionalize/orient ESWM Implementing Mechanisms within three years.	Organize Barangay Solid Waste Management Committee/ Board	32 barangay ESWM committee	32 barangay ESWM committee	32 barangay ESWM committee	32 barangay ESWM committee
	Organize/Functionalize/ orientation SWM Board	At least one orientation per year	1 MSWM Board	1 MSWM Board	1 MSWM Board
	Organize/Operationalize IEC Committees	32 barangay IEC, M&E and I&A	32 Barangay	32 Barangay	32 Barangay
6. To functionalize ESWM enforcement mechanism.	Organize Enforcement Teams / groups in each Barangay	32 barangay with organized Enforcement group/Team	32 Brgy ESWM Enforcement Team	32 Brgy ESWM Enforcement Team	32 Brgy ESWM Enforcement Team
7. To Enhance capabilities of barangay ESWM Implementers	To Conduct leadership trainings/ Trainors trainings/ Seminars in BSWM Planning and Implementation	At least 1 training/seminar for 32 brgys per year	one (1) Training/seminar	one (1) Training/seminar	one (1) Training/seminar
8. To poster political will through-out the ESWM Planning Period (2018-2025)					
To update policies/ ordinance, Executive orders	Updating Municipal Ordinance no. 2006-07	1 ordinance updated	1 ordinance		
	Enactment of Municipal Environment Code (MEC)	1 MEC	1 MEC		
	Issuance of E.O reconstituting/organizing ESWM Mechanisms Committees/Boards	Relevant E.O Issued			
	Formulation and enactment of policy to incentivized waste	One Policy Enacted	One ordinance/r		

	recycling and material recovery.		esolution/E.O		
To capacitate the project implementing unit (MENRO)	Hiring of technical personnel/Creation of position for technical personnel.	Hired additional two EMS (Environmental Management Specialist)	1 EMS		1 EMS
	Capacity Dev't and Trainings seminars	Attendance to Capacity Dev't Trainings and seminars	One (1) CapDev't training	One (1) CapDev't training	One (1) CapDev't training
	Procurement of the LGU of ESWM Equipment :	Procured equipment	1 Unit collection truck	1 unit-bulldozer	
			1 Unit Plastic Densifier	1 Unit Mechanical Composter	
			1 Unit Bottle crusher		
Provision of adequate budget for ESWM PPA - at least 20% increase annually	Allocation/ Appropriation of improved annual investment plan.	Improved AIP	Annually	Annually	Annually
9. Develop linkage with private sector for material recovery and recycling	Development/ formulation Plan for Public Private Partnership (PPP) in Recycling and Material Recovery.	PPP developme nt Plan approved and legitimized	One Document		

## 5. CONCLUSION

The problems that limit the implementation have relation to the LGUs utilization of its budget or finances, and the capability of its personnel, and adequacy of equipment to implement the ESWM Components and Sub-components. Moreover, the hindrances could be overcome by heeding the proposed most important measures which were directed to enforcement or strict implementation of policy, provisions of ESWM facilities, organizing barangay-based ESWM implementing structures, and involving the private sector in recycling and materials recovery.. The LGU can sustain or enhance its extent

of implementation by strengthening its organization structure, capacitating its implementing unit, and providing adequate financial support to its implementing agencies. That in implementing the proposed measures will improve/intensify the extent of ESWM implementation in municipality of Maddela.

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