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The Perennial Struggle of Solid Waste Management: A Review of R.A. 9003 Two Decades Later

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Abstract- ***Solid waste management is still a major environmental problem in the Philippines despite the passage of Republic Act No. 9003, also known as the Ecological Solid Waste Management Act of 2000. This article reviews the implementation of RA 9003 more than twenty years after it was enacted. It examines how the law is being carried out by local government units (LGUs), identifies the main challenges they face, and discusses its relevance in addressing today's waste problems. Findings show that while some LGUs have made progress, many still struggle with waste segregation, operation of materials recovery facilities, enforcement of policies, and limited resources. Problems such as illegal dumpsites, increasing waste volume, and continued reliance on landfills remain common. However, the article also highlights successful practices from selected cities that show the law can be effective with strong leadership, proper planning, and community participation. The study concludes that strengthening enforcement, improving LGU capacity, and encouraging active public involvement are essential to fully achieve the goals of ecological solid waste management in the Philippines.***

Keywords: Solid Waste Management; Republic Act 9003; Ecological Solid Waste Management; Local Government Units (LGUs); Waste Segregation; Environmental Engineering, Environmental Science

I. INTRODUCTION

Solid waste continues to be one of the major environmental challenges in the Philippines. Urbanization, population growth, and consumption patterns are factors why waste generation increases across the cities and municipalities. To solve this environmental crisis, the Republic Act 9003 also known as the Ecological Solid Waste Management Act 2000, was enacted to establish a systematic way of approaching the solid waste management in the Philippines. Two decades have passed, however, the question about its actual implementation and the nationwide compliance remains.

Despite the strong framework of the law, many Local Government Units (LGU) continue to struggle to comply with the basic requirements such as waste segregation, operation of Materials Recovery Facilities (MRFs), and reducing dependence on landfills. The issues of informal dumpsites, low recycling rates, and weak reinforcement is observed which suggest that the objectives of RA 9003 have not yet been fully institutionalized. Recently, the Department of the Interior and Local Government (DILG) reported the LGU Compliance Assessment regarding manila bay clean-up, rehabilitation, and preservation program, that the majority of LGUs (63.48% or 113 out of 178) passed the assessment (scoring 70% or above). The dominant compliance status is Moderate Compliance (49.43%), indicating that while many LGUs are making progress, only a small portion (14.04%) have achieved the highest standards. This article examines the current state of RA 9003 implementation, assesses its relevance in responding to modern waste problems, identifies challenges, and highlights opportunities for strengthening ecological solid waste management in the country.

II. THE POLICY AND LEGISLATIVE FRAMEWORK OF RA 9003

Republic Act 9003 is a law in the signed by Gloria Macapagal-Arroyo, Former President of the Philippines. This law is mandated to manage solid waste properly to protect the environment and public health. The law emphasizes the principles of reducing, reusing, and recycling of solid wastes.

The law is based on the following principles: a) Environmental protection, b) public health and safety, c) resource conservation, d) Local Government Responsibility, and e) Community Participation.

Environmental Protection and Public Health and Safety. Humans should avoid harming the environment at all costs. Moreover, solid waste must be managed to prevent pollution of land, water, and air.

The prevention principle states that prioritizing the prevention of environmental harm is more effective and less costly than fixing damage when it occurs (Cheever, 2025).

World Health Organization (WHO, n.d.) states that improper solid waste disposal contaminates air, water, and soil. These phenomena create breading grounds for disease vectors which increases the risk of infection such as dengue, malaria, cholera, and other illnesses.

Resource Conservation. Reusing and recycling materials helps conserve natural resources and reduces the need for raw materials.

Reusing and recycling materials reduces the amount of raw materials that we gather from the Earth. Natural resources are limited and may become scarce if extraction and consumption remain excessive. (EPA, n.d.) Reprocessing and reusing materials is helpful to adapt with the current and future needs. Moreover, resource extraction is causing environmental damage. It destroys habitats, reduce biodiversity, and contribute to soil and water pollution (IERE, 2025).

Local Government Responsibilities. LGUs are responsible for managing the solid waste in their communities.

R.A. No. 7160 states that "….the LGUs shall be primarily responsible for the implementation and enforcement of the provisions of this Act within their respective jurisdictions."

Philippine Institute for Development Studies (2021) presented that LGUs are in the best position to manage collection, recycling, segregation, and other processes tailor to the needs of the community.

Community Participation. Citizens, businesses, and schools are encouraged to participate in waste reduction, segregation, and recycling programs.

When households and communities participate in waste reduction, segregation, and recycling. The effectiveness of solid waste management programs significantly increases. Engagement promotes awareness, responsibilities, and better adoption of sustainable practices (Abordo & Dalugdog, 2025).

RA 9003 was enacted to institutionalize ecological solid waste management at the household, barangay, municipal and national levels. The law clearly outlines the responsibilities of LGUs mandating them to: a) Implement segregation at source, b) Establish barangay-level Municipal Recovery Facilities, c) Develop a 10-year Solid Waste Management Plan, d) Enforce waste diversion targets, e) Regulate collection, recycling, and disposal activities. While the National Solid Waste Management Commission (NSWMC) established under the Office of the President to monitor and evaluate the solid waste management plans and describe policies. This law also prohibits open burning and the operation of open dumpsites, requiring LGUs to change to controlled disposal facilities and sanitary landfills.

The framework is comprehensive already; however, the challenge is not about the content of the law, but it is about the consistency, capacity, and the drive of the implementer to do their duty as per law. Thus, scrutinizing the relationship of the law and the practice why the law is difficult to follow (Rola, 2022)

III. CURRENT IMPLEMENTATION LANDSCAPE

Two decades after the implementation of the law reports from Department of Environment and Natural Resources, National Solid Waste Management Commission (NSWMC), and Commission on Audit (COA) reveals a mixed landscape, some Local Government Units excelled in their solid waste management programs and initiatives, but most of portion of it is still underdeveloped.

From the 2023 report of COA the country has a total of 11,637 municipal recovery facilities only enough to service 16, 418 out of 42, 046 barangays. And a total of 245 working Sanitary Landfills that only

service 478 out of 1,634 LGUs. Moreover, COA also pointed out the that the whole process of checking the mandated Solid Waste Management plan is very slow. It was presented that some areas already submitted their SWM Plan starting in 2003, but the national office wasn't able to check it until 2010. The late checking also means delayed budget and delayed activities. In addition, as reported in 2023, there are 1,652 plans submitted to the national office and 1,191 (69.41%) of them are already approved.

Another alarming setback in the implementation of RA 9003 is the continued existence of open dumpsites despite their nationwide ban. The Philippine Statistics Authority (PSA, 2024, as cited by Manila Standard Business, 2025) reported a notable increase in sanitary landfills from 299 in 2023 to 343 in 2024, a development that should signal progress. Yet, this improvement is overshadowed by a troubling surge in illegal dumpsites, which rose from 43 to 79 within the same period. This sharp increase not only reveals persistent non-compliance but also exposes deep systemic weaknesses in local government enforcement.

The situation is further worsened by the closure of the 100-hectare Kalangitan landfill in Capas, Tarlac—an essential facility that previously served 130 cities and municipalities. Its shutdown in 2024 forced LGUs into an urgent scramble to find alternative disposal sites, amplifying existing waste management pressures. According to the interview conducted by GMA News Online (2024), Metro Clark in Pampanga now stands as the sole remaining sanitary landfill for hazardous waste, highlighting the country's shrinking capacity to manage its growing waste streams. Taken together, these developments paint a critical picture: the system meant to solve the waste problem is itself under strain, exposing gaps that demand immediate and decisive action.

The observed trends in solid waste management in the Philippines. Statistics show that, contrary to the goal of waste generation, data shows a consistent and increase in the volume of solid waste produce over the years. COA also presented that the primary driver of this result is due to inconsistent implementation of the mandated waste segregation and diversion protocols at the LGUs. This failure causes an evident mixed and unsorted wastes in the landfills.

IV. SYSTEMIC AND ADMINISTRATIVE CHALLENGES IN RA 9003 IMPLEMENTATION

Limited LGU Capacity and Resources. The implementation of RA 9003 across the Philippines remains slow and uneven due to a range of interconnected systemic and administrative challenges that affect both rural and urban localities. Research conducted in Barbaza, Antique (Yazawa et al., 2025) and in Valenzuela City (Andaya et al., 2025), along with broader national studies, consistently highlights persistent resource limitations in many LGUs. Numerous barangays, especially in rural areas, struggle with inadequate manpower, limited technical expertise, and insufficient funding, which results in poorly maintained MRFs, incomplete segregation systems, and lack of essential equipment. Even highly urbanized localities such as Valenzuela continue to face challenges, particularly in sustaining information campaigns and enforcement activities due to constrained budgets. These findings underscore a core issue: while RA 9003 decentralizes waste management responsibilities to LGUs, many of them lack the financial and technical capacity necessary for effective and sustained implementation.

Weak Enforcement and Low Penalties. Compounding these resource constraints is the issue of weak enforcement and inconsistent imposition of penalties. Although segregation at source is mandated by the law, actual enforcement varies widely, with some barangays in Barbaza failing inspections and even experiencing temporary closure of their MRFs due to repeated mixing of waste (Yazawa et al., 2025). In Valenzuela, enforcement mechanisms are present but residents still identify the need for stricter and more consistent application of penalties (Andaya et al., 2025). The inconsistency reflects a broader governance problem where regulations exist but are not uniformly implemented. Adding to the challenge is the inconsistent participation of households, many residents still dispose of mixed waste, bury plastics, or disregard segregation practices, often due to lack of awareness, entrenched behaviors, or cultural habits. National studies affirm that despite awareness

campaigns, household compliance remains one of the biggest barriers to effective solid waste management (Camarillo & Bellotindos, 2021).

Political will further shapes the success or failure of RA 9003 implementation. Changes in local leadership can disrupt ongoing waste management programs, alter budget priorities, or shift focus to more politically visible infrastructure projects. In Barbaza, the level of maintenance of MRFs and continuity of municipal programs fluctuates depending on local leadership priorities (Yazawa et al., 2025). Conversely, Valenzuela demonstrates how strong leadership and active coordination with barangay officials can significantly improve waste management outcomes (Andaya et al., 2025).

Despite these gains, many LGUs continue to rely heavily on landfills due to the lack of waste-to-value facilities.

Moreover, while the informal waste sector greatly contributes to recycling, its exclusion from formal systems limits the efficiency and sustainability of waste recovery efforts (Atienza, 2011). Overall, these challenges reveal why the implementation of RA 9003 varies significantly across regions. Progressive urban areas with strong leadership and resources tend to perform better, while under-resourced rural barangays continue to lag behind. The interaction of limited capacity, weak enforcement, inconsistent public participation, political shifts, landfill dependence, and under-recognized informal workers creates a complex landscape that hinders the full realization of the law's objectives.

V. IMPLICATIONS OF WEAK IMPLEMENTATION OF RA 9003

The weak implementation of RA 9003 produces wide-ranging environmental, social, economic, and health-related consequences that pose serious risks to communities. Poor segregation and improper disposal practices lead to increased pollution in rivers, waterways, and coastal areas, particularly in rural barangays where mixed waste and runoff directly contaminate nearby water bodies (Yazawa et al., 2025). National assessments further confirm that unsegregated waste contributes to clogged drainage systems and polluted waterways, creating significant environmental stress (ADB, 2004). These blockages directly heighten the risk of flooding, especially during periods of heavy rainfall. In areas like Barbaza, where waste collection in remote sitios remains inconsistent, the accumulation of unmanaged waste intensifies vulnerability to flood events.

Health risks also escalate due to unsegregated and improperly handled waste. Open dumping and unsanitary disposal practices create breeding grounds for pests and disease vectors. In Valenzuela, previous spikes in dengue cases were linked to inadequate waste management, and improvements in sanitation and segregation were associated with a decline in vector-related illnesses (Andaya et al., 2025).

Economically, the lack of effective segregation reduces the amount of recyclable materials recovered, diminishing potential income for both LGUs and informal recyclers. Innovative programs such as the Plastics-to-Bricks initiative in Caluya demonstrate significant potential for resource recovery and livelihood generation, yet these opportunities remain underutilized due to weak implementation (Yazawa et al., 2025).

Long-term environmental degradation is another pressing consequence. Improperly managed plastics contribute to microplastic contamination in soils and waterways, posing risks to ecosystems, agriculture, and human health. Prematurely overflowing landfills signal unsustainable waste systems that will increasingly strain local governments. Taken together, these impacts illustrate that the weak implementation of RA 9003 is not merely a regulatory shortcoming but a substantial threat to environmental sustainability, public health, economic resilience, and disaster preparedness. For a country highly vulnerable to typhoons and climate impacts, strengthening solid waste management is an urgent national priority essential to safeguarding both ecosystems and communities.

VI. BEST PRACTICES OF SOLID WASTE MANAGEMENT IN THE PHILIPPINES

Amidst the solid waste management crisis, there are highlights in Solid Waste Management in Philippines

which lead a great example to follow the aim of RA 9003. One of the examples is San Fernando City, Pampanga. Since the implementation of the law, the city established strong policies and infrastructure, including a complete plastic bag ban, mandatory composting and a "no segregation, no collection" (NSNC) policy. As reported, the city achieved an 80% waste diversion rate. Environmental advocates consider this a world-class achievement. This is also similar to the action mandated by the mayor of Cebu City to reintroduce the NSNC policy. Similarly, last 2024, Baguio City has selected four as pilot areas for mandatory waste segregation. Under the program, only residual waste will be collected on designated days to encourage proper segregation, while recyclable materials can be sold to barangay material recovery facilities or collected by LGU partners. The initiative follows Republic Act No. 9003 and Mayor Benjamin Magalong's Memorandum 111-2024, promoting waste reduction and a circular economy.

From the project in the cities of Samar, Calbayog's waste pickers at the sanitary landfill recover recyclables, create crafts, and supply reusable sacks, with most residual waste sent to recycling facilities; the program also offers higher pay and educational tours. In Catbalogan, a provincial plastic recycling facility converts plastic waste into monobloc armchairs, producing several chairs daily that are distributed to schools and local government units. These initiatives were recognized by the Environmental Management Bureau as effective models for sustainable solid waste management (Agosto, 2024).

VII. RECOMMENDATIONS

Based on the findings and analysis of the implementation of Republic Act No. 9003, the following recommendations are proposed to strengthen ecological solid waste management in the Philippines and address the systemic, administrative, and behavioral challenges identified in this study.

1. It is recommended that the national government, through the Department of Environment and Natural Resources (DENR), the National Solid Waste Management Commission (NSWMC), and the Department of the Interior and Local Government (DILG), intensify support for Local Government Units by providing targeted financial assistance, technical training, and capacity-building programs. Priority should be given to under-resourced rural barangays that lack adequate manpower, equipment, and technical expertise. Strengthening LGU capacity is essential to ensure effective waste segregation, proper operation of Materials Recovery Facilities (MRFs), and consistent data monitoring.

2. This study recommends the nationwide institutionalization and strict enforcement of the "No Segregation, No Collection" (NSNC) policy. Clear enforcement guidelines, standardized monitoring mechanisms, and the consistent imposition of penalties and incentives should be established across all barangays. Evidence from high-performing localities demonstrates that strict enforcement of segregation at source significantly improves waste diversion rates and reduces landfill dependency.

3. It is further recommended that the approval and monitoring processes for Local Solid Waste Management Plans be prioritized. The NSWMC should adopt time-bound review procedures, digital submission systems, and provisional approvals to prevent prolonged delays that hinder budget releases and program implementation.

4. Develop a real-time monitoring system for the Solid Waste Management (SWM) initiatives of every municipality in the Philippines. This system should serve as a digital repository of quarterly narrative reports, performance indicators, and progress updates, allowing national and local authorities to track compliance, identify gaps, and institutionalize accountability as part of the culture of local solid waste management committees.

5. Conduct focus group discussions (FGDs) in every municipality to address the unique challenges and contexts of their solid waste management systems. Through careful analysis of root causes and inclusive deliberation, local governing bodies can identify feasible and community-driven solutions. This participatory approach strengthens local ownership and increases the likelihood of effective implementation.

6. Propose and develop strategies to expand the number of sanitary landfills that strictly adhere to national and environmental standards. These strategies should account for the proper handling of different waste types, environmental safeguards, and long-term sustainability to ensure safe and compliant waste disposal across municipalities.

7. Finally, it is recommended that LGUs implement sustained, behavior-oriented information and education campaigns targeting households, schools, and community organizations. These campaigns should be complemented by incentive-based schemes that reward compliance with waste segregation and recycling practices. Strengthening community participation is crucial, as household-level compliance remains one of the most significant barriers to effective solid waste management. Continuous education and incentives can foster long-term behavioral change and improve overall program effectiveness.

CONCLUSION

More than twenty years after the passage of Republic Act No. 9003, the Philippines continues to face challenges in achieving a fully effective solid waste management system. However, this study shows that the national government, as well as cities, municipalities, and barangays, are making sincere efforts to follow the goals of ecological solid waste management. Although the country has not yet reached full compliance, the progress made so far shows that the movement toward proper waste management is already on the right path.

The country may still be far from its ideal solid waste management system, but the progress achieved is significant enough to build a strong foundation for improvement. Several local governments have shown that the goals of RA 9003 can be achieved through strong leadership, proper planning, and consistent implementation. These efforts prove that solid waste management is not only a legal requirement but also an important part of protecting public health, the environment, and communities from disasters.

Community participation remains the most important factor in making the law effective. Focus group discussions, public consultations, and active involvement of residents help increase awareness and encourage responsible waste practices. When people understand their role and take part in decision-making, waste segregation and reduction become easier to sustain.

In the end, protecting the environment means protecting human life. The environment is the world where people live, and caring for it is also a way of caring for ourselves. By strengthening public awareness and encouraging collective action, ecological solid waste management can become a shared responsibility. As the Philippines continues to move forward, people-centered approaches will remain essential in turning the goals of RA 9003 into everyday practice and in ensuring a cleaner, healthier, and safer future for all.

REFERENCES

[1] Andaya, E. J., Antonio, M., Espina, M., Ignacio, J. R., Rebuya, M. A. C., & Cabaddu, J. A. (2025). Implementation of R.A. 9003 in Barangay Gen. T. de Leon, Valenzuela City: An assessment. Journal of Governance and Public Administration, 2(3), 633–642.

[2] Asian Development Bank. (2004). The garbage book: Solid waste management in Metro Manila. Asian Development Bank.

[3] Atienza, V. A. (2011). Review of the Ecological Solid Waste Management Act (RA 9003): Its prospects and challenges. Philippine Institute for Development Studies.

[4] Britannica (n.d.) Environmental law: Principles of environmental law. Encyclopedia https://www.britannica.com/topic/environmental-law/Principles-of-environmental-law

[5] Camarillo, K. A., & Bellotindos, L. M. (2021). Household participation and compliance in solid waste segregation in the Philippines. Journal of Environmental Management and Sustainable Development, 10(2), 45–58.

[6] Commission on Audit. (2023). Solid waste management program performance audit. https://www.coa.gov.ph/wpfd_file/solid-waste-management-program-pao-2023-01/

[7] EPA (n.d.) Recycling basics and benefits. https://www.epa.gov/recycle/recycling-basics-and-benefits

[8] GMA News (2024) Garbage crisis looms amid closure of country's largest landfill in Tarlac. GMA News Online. https://www.gmanetwork.com/news/topstories/regions/909158/garbage-crisis-looms-amid-closure-of-country-s-largest-landfill-in-tarlac/story/

[9] IERE (n.d.) The role of recycling in environmental protection. (n.dhttp://iere.org/the-role-of-recycling-in-environmental-protection/

[10] Manila Standard. (2025) More landfills, dumpsites emerge as Philippine waste surges. https://manilastandard.net/business/314614497/more-landfills-dumpsites-emerge-as-philippine-waste-surges.html

[11] PIDS (n.d.) Philippine Institute for Development Studies. https://www.pids.gov.ph/details/no-time-to-waste

[12] Philippine News Agency. (2024). Article on solid waste management developments. https://www.pna.gov.ph/index.php/articles/1232313

[13] Rola, A. C. (2022). Challenges in governance and implementation of the Philippines' solid waste management programs: Focus on plastics. Transactions of the National Academy of Science and Technology, 41, 1–23. https://transactions.nast.ph/wp-content/uploads/2021/12/2019-Plenary-Paper-Rola-AC.pdf

[14] Yazawa, T., Tablada, K. N., Baring, K. M., Alojipan, K. L., & Watanabe, M. (2025). Act and reality of the Ecological Solid Waste Management Act on barangay-level waste management in Barbaza, the Philippines. Discover Sustainability, 6, 1060.