

POSITION PAPER

Proposed Legislative Measures on Waste-to-Energy

The Philippines faces two urgent and interconnected challenges: ensuring long-term energy security and addressing persistent weaknesses in solid waste governance. **As the country accelerates its transition toward low carbon and indigenous energy systems, policy decisions must carefully balance energy security with environmental sustainability. Waste management reform and energy transition policy cannot move in separate directions. They must reinforce one another.**

The Institute for Climate and Sustainable Cities emphasizes that energy security and sustainability must be pursued within the legal framework already established by Republic Act 9003 or the Ecological Solid Waste Management Act, Republic Act 11898 or the Extended Producer Responsibility Act of 2022, Republic Act 8749 or the Clean Air Act, and Republic Act 9513 or the Renewable Energy Act. These laws collectively establish a hierarchy of obligations that prioritizes waste avoidance and material recovery before disposal or energy extraction. Technology must follow system compliance. It must not substitute for weak enforcement.

The country's waste crisis is primarily a governance and enforcement issue rather than a technological gap. More than twenty years after the enactment of Republic Act 9003, segregation at source remains inconsistently enforced; Materials Recovery Facilities are often underdeveloped or non operational; waste reduction goals are not applied consistently; and materials that can still be recycled or composted are frequently disposed of as residual waste. These systemic weaknesses inflate reported residual volumes and shift policy discussions toward large-scale disposal technologies before upstream compliance is fully implemented.

At the same time, the Philippines is pursuing energy transition anchored in energy security, affordability, reliability, and climate commitments. **Waste-to-energy proposals must therefore be evaluated not only through a technical lens but also through governance integrity, statutory compliance, and alignment with the waste hierarchy. Allowing large-scale disposal-driven technologies before correcting upstream compliance risks reversing the structure of Republic Act 9003, institutionalizing non-compliance, weakening local government accountability,** and undermining public trust in both environmental and energy policy.

Republic Act 9003 establishes a clear hierarchy: reduce and avoid waste, segregate at source, recycle and compost, and dispose only of minimized residual waste. Republic Act 11898 reinforces this by requiring large enterprises

to recover and divert plastic packaging. True residual volumes cannot be determined without full enforcement of segregation and producer responsibility. Republic Act 8749 imposes strict emission standards and prohibits incineration that releases toxic or poisonous fumes. Any legislation must therefore be fully aligned with the Clean Air Act and must not weaken existing environmental safeguards. Republic Act 9513 provides renewable energy incentives, but these must not undermine waste governance or create incentives to sustain waste generation.

Together, these laws do not reject technology—they set the guardrails. They make clear that **waste reduction and material recovery must come first, and that only what truly cannot be recycled or composted should move to the final stage of treatment.**

The November 2023 MMDA Feasibility Study

Reviewing the November 2023 *MMDA Feasibility Study to Determine the Appropriate Waste-to-Energy Technology in Metro Manila* reveals structural weaknesses that weaken the claim that waste-to-energy is a necessary solution for the region. Projected waste generation in 2025 is approximately [13,310 tons per day](#). Based on MMDA Solid Waste Management Information System data¹, roughly 30.9 percent or about 4,113 tons per day of waste is classified as residual waste. In the MMDA study:

1. The proposed plant has a total processing capacity of 500 tons per day of municipal solid waste and operates for 330 days per year.

This represents **approximately 12 percent of Metro Manila’s daily residual waste**. Even if implemented, the facility would address only a small fraction of the waste stream, **suggesting that multiple facilities would be required to create a significant impact on the overall waste generated.**

2. The project is found to be **financially non-viable**, with a calculated Financial Internal Rate of Return (FIRR) of negative 3 percent.

The FIRR measures whether a project’s expected revenues are sufficient to recover its total investment cost over time. A negative FIRR means that the project is projected to cost more than it earns. Even with private sector participation, the project would not meet standard investment return expectations without government support.

To close the gap, the study assumes annual subsidies of PhP 800 million for the first five years and PhP 700 million for the next five years. These subsidies scale directly with replication. Constructing multiple facilities would proportionally increase annual fiscal commitments, effectively tying the government into long-term

¹ Metropolitan Manila Development Authority (MMDA), Solid Waste Management Information System (SWMIS), accessed February 19, 2026, <https://swmis.mmda.gov.ph/#homepage-map>.

public exposure to infrastructure that does not generate sufficient returns on its own.

3. The **revenue projections also depend heavily on tipping fees rather than electricity sales.**

While revenues may cover operating and maintenance costs, they are insufficient to recover total capital investment once financing and loan amortization are included. The facility's financial viability therefore depends more on sustained waste delivery and tipping payments than on the value of electricity generated.

The findings show that the proposed incineration-based WtE facility functions principally as a waste disposal tool with incidental power generation. Its electricity contribution to the grid is marginal, while its financial structure relies on continued public subsidy and sustained tipping fees rather than on competitive energy production.

This raises a central policy question: if substantial public funds are required to make the project viable, **is subsidizing incineration the most effective and efficient way to address Metro Manila's waste management challenges?**

The total cost of the project is Php 5.4 billion. That same level of fiscal support could instead be directed toward strictly implementing the provisions of RA 9003 and RA 11898, including waste reduction, at-source segregation, recycling, composting, and materials recovery systems. These interventions permanently reduce disposal demand, improve compliance with national law, and build a system that functions by generating less waste rather than by sustaining disposal volumes, and build a system that works because we generate less waste—not because we burn more of it.

For example, the [City of San Fernando, Pampanga](#) invested in barangay-level segregation, materials recovery facilities, and centralized composting systems to divert biodegradable and recyclable waste from disposal. By strengthening compliance with source segregation and enforcing local ordinances under RA 9003, the city was able to significantly reduce the volume of residual waste requiring final disposal.

Feedstock Stability and Energy Performance

Moreover, WtE incineration projects have an underlying assumption that its feedstock should be steadily available and suitable for combustion. The current waste management practices in Metro Manila make this uncertain, creating operational and financial sensitivity.

To assess waste composition, the study used the Waste Analysis and Characterization Study (WACS), which is fundamentally designed to help the government identify what types of waste are being generated so it can reduce waste at the source, expand recycling and composting, and minimize the amount that ends up in final disposal. Yet using that same data, the study estimates that 70 to 82 percent of selected city-level waste streams could serve

as potential WtE feedstock, based on the assumption that all biodegradable waste and significant portions of recyclable materials are input to combustion.

Biodegradable waste, mainly food and organic scraps with high water content, is reported as the largest fraction of the waste stream. In laboratory testing of samples from the pilot LGUs, 7 out of 9 did not meet the specified moisture requirement for WtE systems, meaning most of the sampled waste was wetter than optimal for efficient combustion, although all samples met the minimum calorific value threshold. Moisture affects combustion performance because part of the heat generated is first used to evaporate water before sustained heat release can occur. Higher moisture levels therefore reduce net energy yield and increase operational sensitivity to feedstock variability.

The proposed Phase 1 facility in the study is designed to process 250 tons of municipal solid wastes which accounts for 6 percent of the daily residual waste in Metro Manila. In this design, 30 percent of its generation is consumed internally, leaving roughly 3.66 MW available for sale to the grid. If average generation declines due to feedstock variability, net export power declines correspondingly.

Even modest reductions in electricity output reduce annual power sales revenue, while many operating expenses and financing obligations remain fixed. Over time, lower export volumes accumulate into material revenue gaps. In a project already operating on narrow financial margins, reduced net output increases financial exposure and increases reliance on stable tipping fee revenues to sustain viability.

The feasibility study also projects diversion rates rising to as high as 84.6 percent. Under Republic Act 9003, biodegradable waste is prioritized for composting and biological treatment, and recyclables for material recovery before energy recovery is considered. DAO 2019-21 permits thermal treatment subject to Clean Air Act compliance but does not remove this waste management hierarchy.

As diversion performance improves and residual waste declines, the volume and composition of material available for combustion may change over time. Because the facility's energy output and financial projections assume steady long-term throughput, improvements in waste reduction, segregation, composting, and recycling directly affect long-term fuel supply stability.

Taken together, the plant's projected performance depends on three aligned assumptions: steady waste volumes, suitable moisture characteristics, and continued availability of materials prioritized for diversion under national law. Any shift in these conditions affects both the amount of electricity produced and financial projections.

Prioritizing Renewable Energy

The Philippines must ensure that its renewable energy strategy is fully aligned with existing environmental and waste management laws. Municipal solid waste should not be part of the country’s renewable energy portfolio, as recognizing it as such risks undermining the waste reduction and circular economy principles enshrined in the Ecological Solid Waste Management Act of 2000. Rather than creating policy contradictions, renewable energy expansion should focus on indigenous and genuinely sustainable resources. Biomass energy derived from agricultural residues, forestry by products, and organic materials offers a more coherent alignment with national climate and rural development objectives. Properly managed biomass systems support local economies, reduce open burning in agricultural areas, and complement renewable energy expansion without undermining waste reduction targets. Indigenous renewable energy sources, including solar, wind, geothermal, hydro, and sustainable biomass, remain the most reliable and scalable long-term pathway for energy affordability, reliability, and security.

The policy choice before lawmakers is not framed as waste to energy versus no waste to energy. It is whether residual waste treatment technologies will be introduced in a manner that strengthens governance, protects consumers, and aligns with energy transition targets, or whether they will create disposal-driven systems that weaken the waste hierarchy. **A science-based system requires accurate measurement of residual waste, transparent monitoring, enforceable environmental and social safeguards, and priority for renewable energy that does not depend on producing more waste.**

The Institute for Climate and Sustainable Cities maintains that energy security and waste governance must be aligned. The ecological waste hierarchy under Republic Act 9003 should remain the foundation of solid waste management, with full enforcement of segregation, recovery, and Extended Producer Responsibility to ensure accurate measurement of true residual waste. **The Philippine’s long-term reliability, affordability, reduced import dependence, and system resilience must remain anchored in indigenous renewable energy sources that do not depend on sustained waste generation.**

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