



Building Community Resilience and Green Jobs through Organic Waste

Climate Benefits and Economic Model
of Just Organic Waste Management
in Quezon City

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Executive Summary

The organics diversion project in Quezon City demonstrates how decentralized, community-based waste systems can advance both climate action and social inclusion. The Barangay¹ Payatas Zero Waste and Urban Farming Project, launched in 2024, stands as a model of how cities can integrate organic waste management, food production, and livelihood creation to achieve just and sustainable methane mitigation.

Once home to one of Metro Manila's largest dumpsites, Barangay Payatas now leads a transformation grounded in local participation. The project, jointly implemented by the Barangay government and the Quezon City Climate Change and Environmental Sustainability Department, promotes source separation, composting, and urban farming. At its center is a Materials Recovery Facility (MRF) that processes source-separated waste, produces compost and biogas, and cultivates crops for community consumption and sale. This initiative aligns with the city's Joy of Urban Farming program and national waste management legislation.

The project diverts approximately 3.6 tonnes of organic waste per month, producing compost, biogas, and seasonal crops such as okra, papaya, and ginger. Beyond environmental gains, it serves as an important source of green jobs, employing 48 workers, including 40 former informal waste workers who are now formalized.

The project is publicly funded through combined resources from the barangay, Quezon City, and national government agencies, reflecting a strong institutional commitment to inclusive climate solutions, contributing significantly to project sustainability. An economic analysis shows that the project's core economic values lie in avoided landfill costs, methane reduction, and community benefits. Scaling, however, is constrained by limited land availability, funding gaps, and insufficient equipment for expanded collection. Addressing these barriers will require sustained city-level financial and technical support, additional land allocation, and stronger community participation.

¹ A barangay is the smallest administrative division in the Philippines, functioning as a local government unit comparable to a village or district and serving as the basic political and community organizing structure.

A greenhouse gas (GHG) assessment using the Combined CH₄ & CO₂ Emissions from Waste Calculator developed by Eunomia indicates that Quezon City's Zero Waste Scenario could reduce annual global warming impacts by 75 percent by 2050 compared to a Business-as-Usual trajectory. Expanding composting to cover 80 percent of the city's organic waste could cut methane emissions by more than sixteenfold.

By embedding waste reduction, urban farming, and social equity into one system, Quezon City is laying the groundwork for a citywide zero waste model that delivers climate benefits, strengthens food security, and creates dignified livelihoods—proving that just methane mitigation can begin at the community level.

The partnership between the local organization Mother Earth Foundation (MEF) and Quezon City has been instrumental in supporting the city's barangays in setting MRFs as part of broader zero waste strategies. **Overall, MEF has supported 550 barangay MRFs nationwide, and has trained 658 barangays in zero waste implementation.** These partnerships have been critical in building community-based systems with high diversion rates - over 80 percent in some places.



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Recovering Organic Waste for Improved Food Systems

In Quezon City, one of the most populous cities in the Philippines, the Barangay Payatas Zero Waste Project is making significant strides in community-based waste management. The project, which was conceptualized in November 2023 and became fully operational in January 2024, is a response to the area's unique history and high-density population of 141,000 residents. Located in District II, **Payatas was historically home to a large dumpsite²**, making it a critical location for a waste management overhaul. The project's goal is to establish a community-based zero waste system that aligns with improving food systems, promoting source separation, and diverting organic waste through composting and urban farming, and integrating informal waste workers.

This initiative is the result of a collaboration between the local barangay administration and the Quezon City Climate Change and Environmental Sustainability Department. At the heart of the operation is a Materials Recovery Facility (MRF), where source-separated household and market waste from the nearby area is brought in daily by waste collectors. The MRF includes an urban farm where seasonal crops are produced for the community, a small anaerobic digester, and a composting facility that receives food waste from four small fresh produce markets and from a pilot program of separate collection from about 20 households, a livelihood center where products are crafted from discarded textiles and recyclable materials, and the barangay office for solid waste management.

The system is aligned with Quezon City's "Joy of Urban Farming"³ program, and the city's commitments to build resilient food systems^{4,5} and the national waste management legislation. The partnership between the local organization Mother Earth Foundation (MEF)⁶ and Quezon City has been instrumental in supporting the city's barangays in setting MRFs as part of broader zero waste strategies. **Overall, MEF has supported 550 barangay MRFs nationwide and has trained 658 barangays in zero waste implementation.**

² Learn more at: Ito, H., & Igano, C. (2023). Bad or worse? Applying critical theory to explore the impacts of Payatas dumpsite closure on the former waste pickers. *Waste Management & Research*, 41(6), 1114–1120. The "Payatas Tragedy" was also the direct inspiration of the Philippines' Republic Act 9003 or the Ecological Solid Waste Management Act of 2000 – our national law on waste management. <https://doi.org/10.1177/0734242X221137821>

³ Joy of Urban Farming, Quezon City <https://quezoncity.gov.ph/program/joy-of-urban-farming/>

⁴ Circular Quezon City: Bringing the circular economy to Quezon City's Food System. September 2022 https://circulars.iclei.org/wp-content/uploads/2022/09/CL4C_-Mini-Roadmap_Quezon-City.pdf

⁵ Good Food Cities Accelerator <https://www.c40.org/accelerators/good-food-cities/>

⁶ <http://www.motherearthphil.org/>

The program is also a significant source of green jobs. The organic waste and urban farming component engages a total of 48 staff, most of whom share tasks with other areas of the zero waste system. In total, this translates into 16 full-time equivalents.⁷ Forty of these workers used to be informal workers and have been formalized.

Payatas zero waste program shows a clever way to integrate organic waste with improved food systems in an urban setting, building community engagement and creating dignified jobs.

Organic waste management unit

Quezon City





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 **Jobs**

16 FTE
40 informal workers

 **Funding**

Public funding (local, national)
Vegetables sales

 **Organics**

43 tonnes/year organics diverted

 **Methane**

2.1 tonnes/year methane emissions avoided

⁷ Full-time equivalent is a measure that adds up the hours of all workers -including full time, part-time or other types- and then calculates the equivalent number of full-time workers.

Economic Analysis⁸

Funding Sources

The program is publicly funded, combining barangay budget for solid waste management, in-kind contributions by Quezon City (mostly machinery and land), and a grant provided by the national government through the Department of Environment and Natural Resources.



Capital and Operational Costs

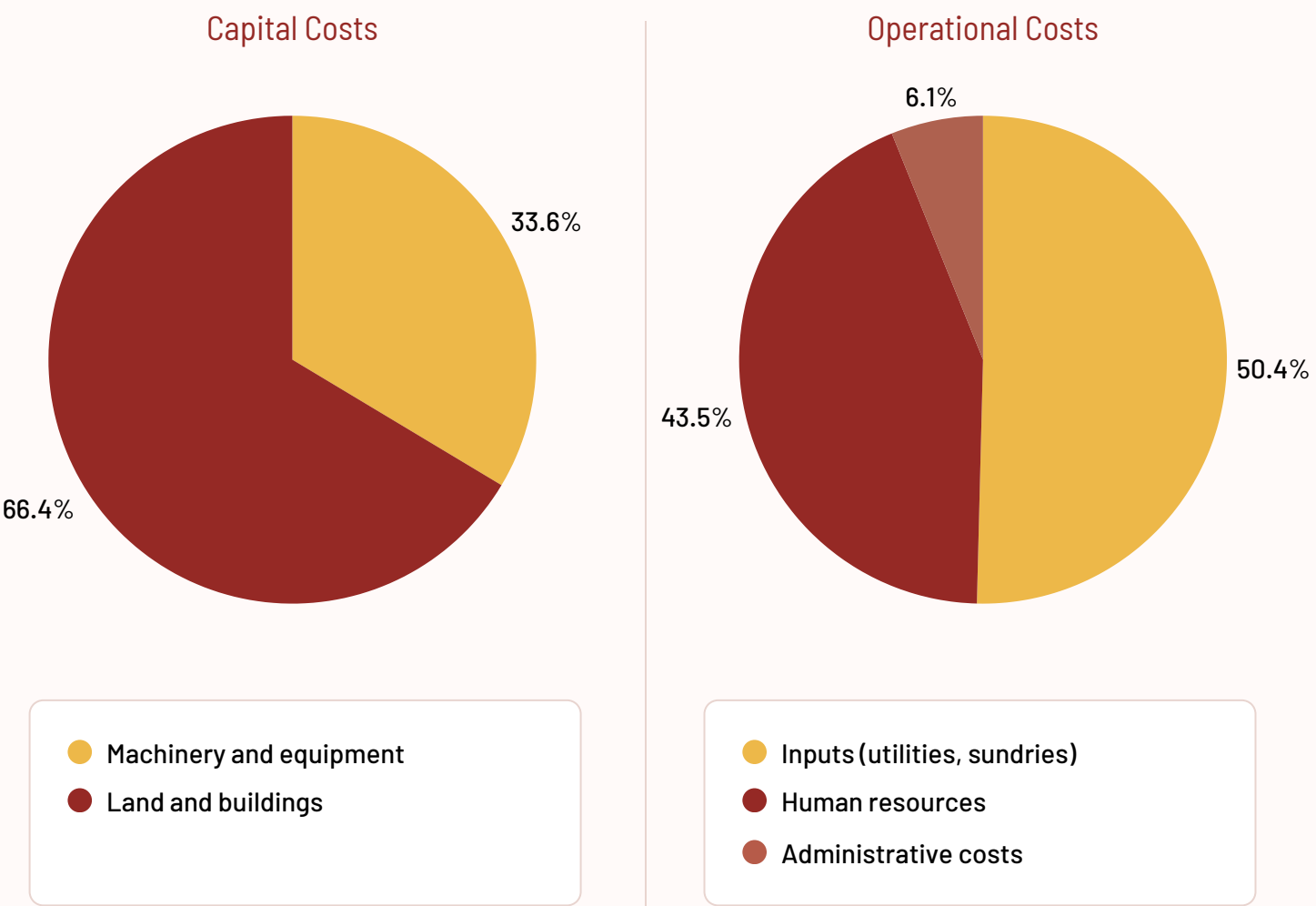
Capital expenditure for the organics component is predominantly related to land and buildings. This mirrors patterns in other zero waste models across the global south, where land and infrastructure are both the main drivers and barriers to capital investment—representing up to 89 percent of total asset value in Indonesia and 58 percent in Brazil.⁹ The full site—including the composting site, anaerobic digester, farm, MRF, livelihood center, and barangay government office—extends through 1250 m², of which 500 m² are used for the organic diversion program and urban farm. The land is owned by Quezon City and has been granted to the barangay government for use in the project without any rental being paid. At the project's inception, several on-site structures were already in place, including the MRF, composting area, urban farm, and biodigester. These were donated by the national government, while repairs to the MRF were funded by the barangay. In addition to the land and building for the project, the city donated all the machinery, equipment, and miscellaneous materials to the project. Machinery and equipment used in the program include a dual drum composter, a manual composter, an anaerobic digester, a shredder, a pickup truck, and manual tools.

Operational costs are covered by the barangay government, with utilities such as water, energy, and transport being half of these expenses, followed by salaries and administrative costs.

⁸ This chapter is based on an economic analysis developed by Lumec (Pty) Ltd, an economic development research organisation based in South Africa.

⁹ Yusuf, B.; Bimo, R.; Gembira, H.; Nurfitriani, F. and Purnomo, I. (2025) Enabling Conditions for Scaling Up Solid Waste Management Financing: Case Studies in Indonesia and Brazil. Climate Policy Initiative. <https://www.climatepolicyinitiative.org/publication/enabling-conditions-for-scaling-up-solid-waste-management-financing-case-studies-in-indonesia-and-brazil/>

Figure 1. Project Cost Breakdown (in percentage)



Green Jobs

In total, the program engages 48 staff: 8 are full-time employees responsible for the operation of the anaerobic digester, composting, and the urban farm, while the rest are street sweepers and waste collectors who are only partially allocated to the organics project. Translated into full-time equivalents, the project operates with 16 full-time equivalents¹⁰. All of the positions are paid for by the barangay government. In addition to the direct human resources, there are 45 environmental police officers who are indirectly involved in the project. They are barangay law enforcers who issue penalties to violators and provide simple information and education campaigns around proper waste management.

¹⁰ Full-time equivalent is a measure that adds up the hours of all workers -including full time, part-time or other types- and then calculates the equivalent number of full-time workers.



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The 40 street sweepers and waste collectors used to be informal workers (waste pickers), but are now formalized into the barangay program. This shows that zero waste systems provide a low-barrier entry source of jobs and are strengthened by the inclusion of informal waste workers who have been doing this job for decades. It is also a model of how waste management can meet environmental justice, protecting waste pickers and waste workers' livelihoods and including them in formal waste management programs.

Production

The project, at its pilot stage, diverts approximately **3.6 tonnes of organic waste monthly**, coming from four fresh produce markets and a pilot project of separate collection of organics in about 20 households. The organic waste is processed into compost and biogas for on-site use. A further 36 - 70kg of chicken manure is collected per month and used as a fertilizer for farming operations.

The facility produces a diversity of products ranging from compost and biogas to a variety of seasonal crops (including ginger tea, papaya, okra, and many more), some of which are sold and some given away. The anaerobic digester is a small-scale unit set for demonstration purposes. The biogas is used for on-site cooking by the workers, and the digestate is mixed with the organic waste in the composting plant.

Revenues

The commercial revenues generated from the sale of farm produce total US\$326.43 per month. Both the compost and biogas generated are used on-site, and do not currently generate any revenue, but save energy and compost acquisition costs.

Barriers and Opportunities to Scaling

Scaling Requirements

Increased production capacity

Barriers to Scaling	Opportunities
Limited land availability	<ul style="list-style-type: none"> • Support land-access mechanisms (e.g., through local ordinances, urban land use planning, or public-community partnerships) to facilitate siting of decentralized organic waste facilities. • Identify idle or vacant land – repurposing underutilized spaces within neighborhoods to reduce hauling distances and improve community participation.

Scaling Requirements

Increase collection vehicles and equipment

Barriers to Scaling	Opportunities
Insufficient collection vehicles for organic waste collection	<ul style="list-style-type: none"> • Additional vehicles for organics waste collection. • Schedule regular maintenance. • Consider renting or sharing vehicles if a full purchase is not feasible.



Scaling Requirements

Increase the supply of organic waste

Barriers to Scaling	Opportunities
Limited household and food establishment participation	<ul style="list-style-type: none"> • Expand the pilot to include more households. • Sign supply agreements with food waste producers and bulk generators (e.g., restaurants, fresh markets, etc.) – starting with low-hanging entities under the local government’s work jurisdiction (e.g., municipal-owned markets). • Mandate food waste producers and bulk generators to handle their own organic waste and implement source separation of organic waste to foster enabling conditions for establishing agreements with waste treatment operators or facilities. • Integrate composting in education spaces, particularly public schools and universities, linking to urban farming and food security, or establish an organic waste management service agreement with the composting facilities. • Training for waste management staff.

Scaling Requirements

Increased budget for organic waste processing

Barriers to Scaling	Opportunities
Funding constraints	<ul style="list-style-type: none"> • Continued support and funding from government agencies for staff, buildings, and equipment. This could include viability gap funding, infrastructure, and technical development funds. • Explore public funding sources connected to other areas of the program, such as health, agriculture, and labor promotion.

Scaling Requirements

Increase site income

Barriers to Scaling	Opportunities
Low sales revenue	<ul style="list-style-type: none"> • Explore partnerships with local markets, businesses, and NGOs to increase sales of vegetables. • Develop markets for compost sales and farm produce. • Establish a compost offtake guarantee, procuring compost for their public landscape maintenance. Apply the Green Public Procurement Ordinance to vegetables and compost products. • Compost price regulation, setting a minimum sales price to set market certainty and revenue predictability. • Promote products through social media or barangay channels.

Scaling Requirements

Community awareness campaigns

Barriers to Scaling	Opportunities
Limited participation in the waste segregation	<ul style="list-style-type: none"> • Use barangay social platforms, local events, and community leaders to educate households. • Monitor participation and feedback for continuous improvement. • Set incentives for source separation.

Scaling Requirements

Legal requirements to operate

Barriers to Scaling	Opportunities
Compliance requirements	<ul style="list-style-type: none"> • Ensure all permits and regulations are fulfilled. • Engage legal or regulatory support to maintain compliance.

Upscaling Considerations

The current pilot project within the Barangay Payatas operates at full capacity, utilizing the entire site that has been allocated to the project by Quezon City. Although scaling up could be achieved, for example, by increasing the number of streets or households that are covered for food waste collection, the main limiting factor within this barangay is the availability of space, and the budget and capacity of the barangay government to support the project.

As such, **scaling of this project would consist of replication to another site in Barangay Payatas or to another Barangay in the Quezon City area.** This would require an additional budget for salaries of staff and waste workers, as well as more collection vehicles and additional equipment, machines, or technology to process organic waste more efficiently. There is also a need for greater community awareness through training and campaigns to encourage households and the wider community to separate organic waste at source. However, an additional limiting factor is access to land; within Metro Manila, land is expensive, and a lot of government land is located near rivers or environmentally sensitive areas, so access to new sites for such replication can be difficult to access.

The analysis shows that the capital requirements for replicating this project to another site are approximately US\$74,486, and the required operational costs over the next 5 years for replication would be US\$208,807. From a financial perspective, the project can scale up as the public service of separate collection of waste expands into the organics and recyclable waste streams. As the current system portrays, the sale of vegetables can help cover part of the operational costs. Yes, the financial case rests on recognizing the project's impact in diverting organic waste from landfill and the cost savings associated with this, as well as the wider environmental and social benefits. This underscores the importance of securing continued and further public funding for capital investments such as land and equipment, as well as recurrent support for operational costs, particularly resources and salaries, to sustain the initiative at scale.



Greenhouse Gas Emissions Reduction

In order to assess the climate mitigation impacts of zero waste approaches in Quezon City, the Combined CH₄ & CO₂ Emissions from Waste Calculator developed by Eunomia¹¹ was used to compare a baseline and an alternative zero waste scenario. In the baseline, Business as Usual (BAU) scenario for 2025, the city's official data indicate an overall diversion rate of 39 percent, with roughly 42 percent of organic waste being composted. Most residual waste is still landfilled (61 percent), while the remainder is disposed of in open dumps (39 percent).

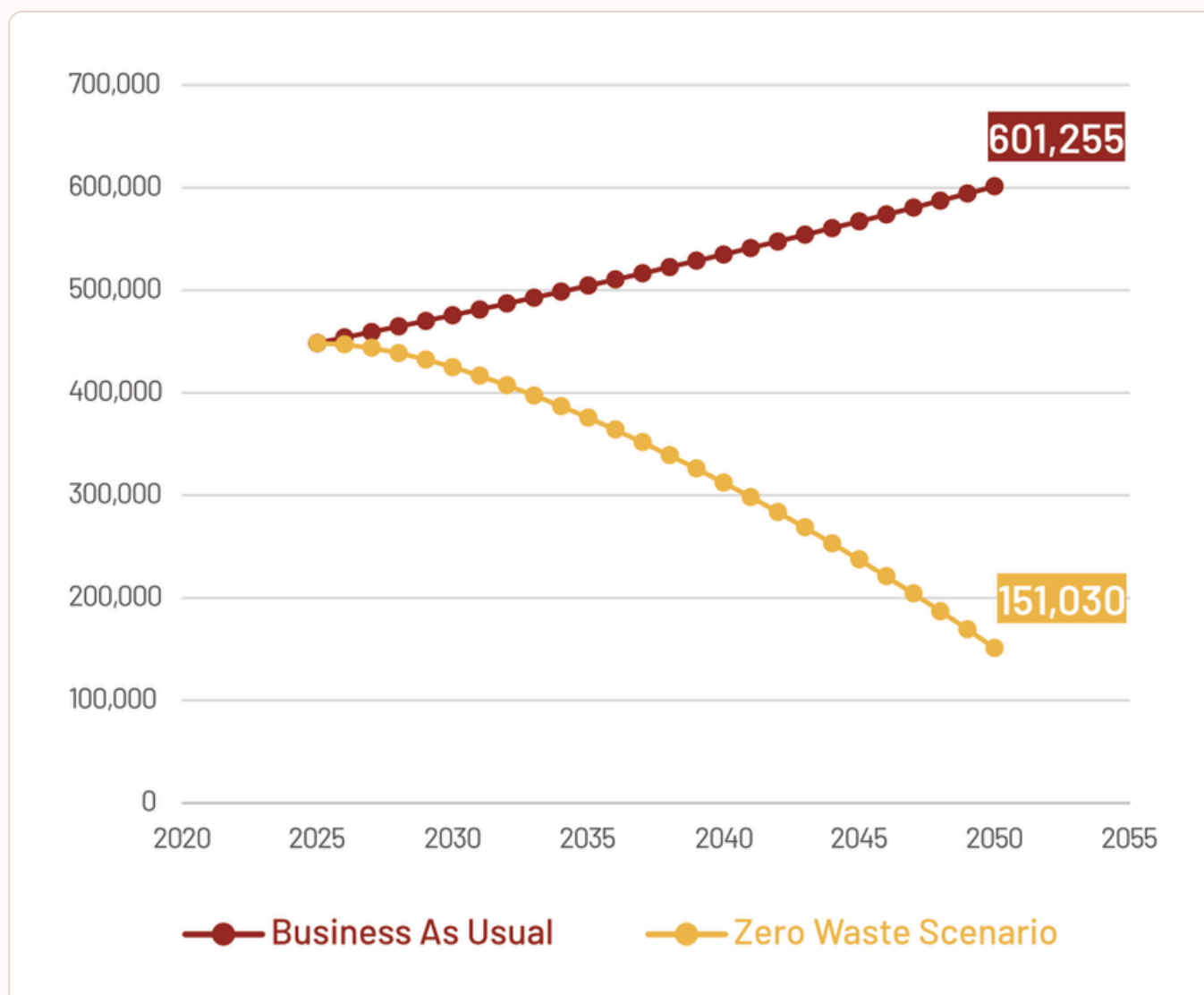
The Zero Waste Scenario reduces the annual global warming impact by **75 percent**, compared to the BAU scenario. Under the Zero Waste Scenario, the city achieves substantial diversion rates—about 80 percent for most materials, including organics, and 50 percent for plastics, textiles, and other waste types by 2050.¹² To be able to unlock this mitigation potential, zero waste systems should be scaled up to cover the city, supported with sufficient resources.



¹¹ Eunomia Research & Consulting. (2025). Combined CH₄ & CO₂ Emissions from Waste Calculator. Global Alliance for Incinerator Alternatives.

¹² These diversion rates were set based on existing aspirational cases seen in San Francisco, USA, and Capannori, Italy, where 80 percent of waste diversion is achieved; higher diversion rates were applied for plastics and other waste for the Zero Waste Scenario for Quezon City, as the current diversion rate is reported to be 42 percent across different waste streams.

Figure 2. Annual GHG emissions (2025-2050), in metric tons of CO₂ equivalents



Diverting organic waste from landfills plays a pivotal role in reducing the climate impacts of waste systems in Quezon City. Currently, the organic waste recycling project led by Barangay Payatas alone is diverting **43 tonnes of organic waste** each year, saving **2.1 tonnes of methane emissions** annually. This is equivalent to avoiding **56.7 tonnes CO₂e**. The methane reduction potential will grow to **32.95 tonnes of methane emissions, nearly 16 times higher**, if composting is scaled up to cover 80 percent of the organic waste generated in the city by 2050.

Recommendations

Quezon City already has a strong foundation for supporting organic waste recycling, grounded in the National Ecological Solid Waste Management Act, the City Mayor's office 10th out of the 14 point priority agenda - to build a livable, green, and sustainable city, and other city programs such as the Climate Change and Environmental Sustainability Department's initiatives, urban farming projects, and international partnerships. Furthermore, the Implementing Rules and Regulations (IRR) of the Quezon City Green Public Procurement Ordinance of 2021¹³ requires the barangays to incorporate environmental considerations in their procurement and annual budget planning. Although these frameworks create an enabling environment, scaling up of a project such as this requires direct and consistent government support.

The city government can strengthen the role of the barangays in achieving climate goals by extending financial support, funding capital expenses for scaling and or replication, and, in particular, allocating land to the project. Another option is to explore the possibility of sharing MRF with a nearby barangay to cater to and recover more organics. The city can also support the feasibility of a scaled project through procurement commitments to use compost in parks and urban farms, thus creating a demand for the compost produced.

The barangay could also expand incentives for waste segregation, support mobile collection models, and invest in both further capacitating the waste workers and education campaigns that encourage households and businesses to separate food waste at source. By aligning organic recycling with food security, climate mitigation, and circular economy goals, Quezon City can unlock significant public benefits: reduced landfill dependence, lower methane emissions, and a reliable stream of compost for urban agriculture.

¹³ Accelerating NDC through Circular Economy in Cities – ACE Project: Formulation of Implementing Rules and Regulations (IRR) of the Quezon City Green Public Procurement (QC-GPP) Ordinance of 2021. ICLEI <https://iclei.org/activity/accelerating-ndc-through-circular-economy-in-cities-ace-project-formulation-of-implementing-rules-and-regulations-irr-of-the-quezon-city-green-public-procurement-qc-gpp-ordinance-of-2021/>

Conclusion

The Barangay Payatas program provides an interesting approach to rethinking food systems by connecting urban farming and food security with organic waste processing.

The model combines two purposes aligned with Quezon City's vision for urban food systems: local production of seasonal crops available for the community and processing of organic waste from the barangay, to nurture those crops.

Being deployed in a decentralized manner, **the program has the advantage of being flexible to adapt to available budgets and to grow as community engagement is built** and new separate collection systems are put in place in more areas of the barangay.

From an economic perspective, the ongoing public funding from the barangay to cover operational costs has been critical to the financial sustainability of the program, while the sale of vegetables has been helping to defray those costs. **This underscores the importance of securing continued and further public funding for capital investments such as equipment, as well as recurrent support for operational costs,** particularly salaries, to sustain the initiative at scale.



Its value lies in the wide range of environmental and social benefits it spurs, including waste diversion from landfills, climate change mitigation and adaptation, food sovereignty, a just transition through green jobs, and community engagement. This holistic vision could be translated into increasing funding sources from other government areas, such as health, labor, and agriculture.

The climate change mitigation potential of zero waste systems is undeniable; compared to the BAU scenario, **a zero waste model will reduce methane emissions by 25 percent per year and overall GHG emissions by 75 percent by 2050**. Expanding the decentralized segregated waste collection scheme and model of MRFs connected with improving food systems, and building positive synergies between national, city, and barangay level governments, is essential to achieve climate goals at all levels.

This underscores the importance of shifting climate finance to support zero waste systems—not only as a rapid mitigation strategy but also as a means to build long-lasting, low-carbon systems grounded in community ownership and green jobs. It also highlights the need to increase waste management budgets to enable local governments, waste worker and picker organizations, and community groups to solidify the transition to zero waste.



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GAIA is a network of grassroots groups as well as national and regional alliances representing more than 1000 organizations from over 100 countries. With our work, we aim to catalyze a global shift towards environmental justice by strengthening grassroots social movements that advance solutions to waste and pollution. We envision a just, Zero Waste world built on respect for ecological limits and community rights, where people are free from the burden of toxic pollution, and resources are sustainably conserved, not burned or dumped.

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